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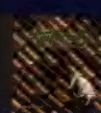
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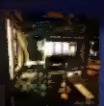
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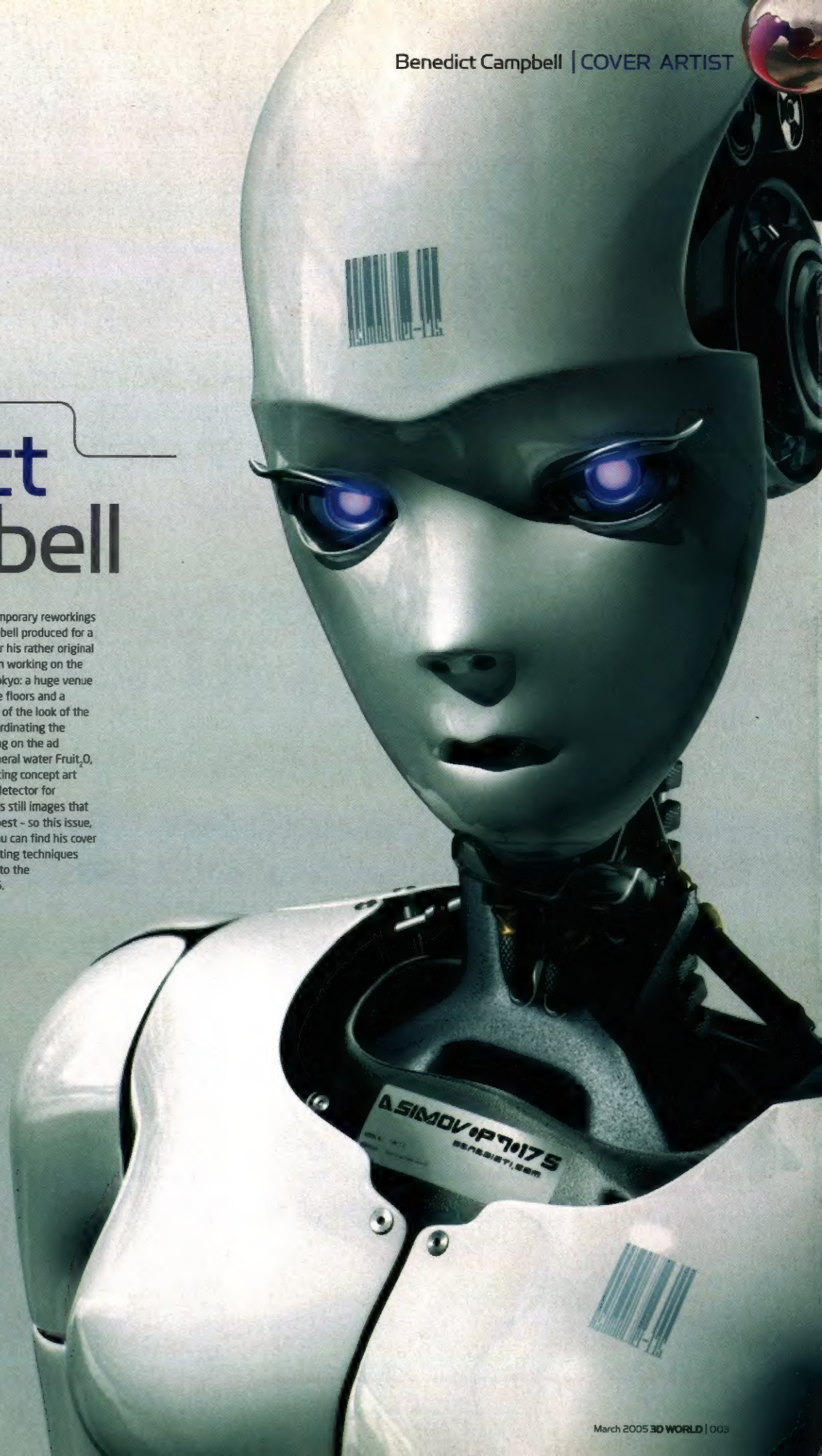
COVER ARTIST

Benedict Campbell

BACK IN ISSUE 35, we showcased the contemporary reworkings of religious imagery that artist Benedict Campbell produced for a London gallery exhibition – you may remember his rather original take on *The Last Supper*. Since then, he's been working on the art direction for a sci-fi themed nightclub in Tokyo: a huge venue able to hold 4,500 people, with multiple dance floors and a swimming pool. Benedict was solely in charge of the look of the venue, video walls, dancers and acrobats, co-ordinating the overall style of the club. He's also been working on the ad campaign for the American fruit-flavoured mineral water Fruit₂O, is currently busy on three film projects, producing concept art for props, and has even designed a handheld detector for electromagnetic radiation! However, it is for his still images that many people in the 3D community know him best – so this issue, we asked him to reveal some of his secrets. You can find his cover tutorial, which explores the texturing and lighting techniques required to turn the base meshes on our CD into the photorealistic android on the right, on page 46.

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dream machine

046 Create our cover android with Benedict Campbell's masterclass in texturing and lighting - all necessary software on CD



Are games all work and no play?

016 IGDA surveys show that 13% of games artists have worked an 80-hour week. *3D World* investigates

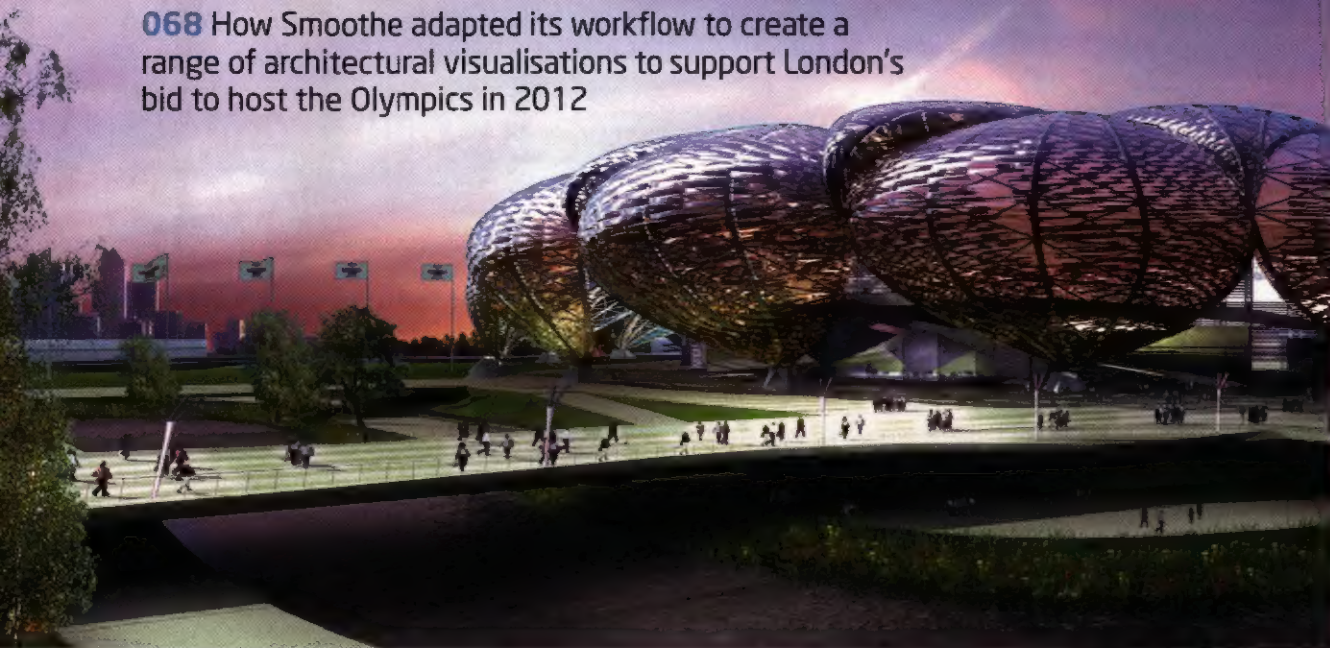
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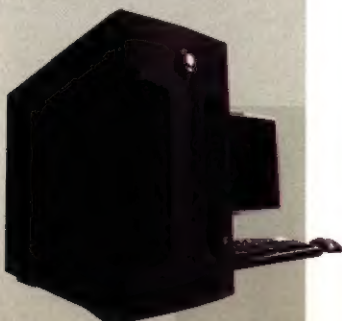


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**European Representative,
DreamWorks**

Shelley Page started her career as a background artist. After working on *Who Framed Roger Rabbit?*, she joined Stephen Spielberg's Amblimation Studio. Since 1997, she has been European Representative for DreamWorks' latest feature projects and animation talent scouting.
www.dreamworks.com

JORDI BARES



Senior 3D Animator, The Mill

Jordi Bares worked for eight years in the games and film industries in his native Spain, before moving to London in 2000, where he has also freelanced at Jim Henson's Creature Shop and Passion Pictures. The winner of many awards, he was nominated for an Emmy for his work on the BBC documentary *Pyramid*.
www.mill.co.uk

ANDREW DAFFY



CGI Supervisor, House of Curves

Andrew Daffy has worked in the CGI industry for ten years on projects that have accumulated over 30 awards. He was recently named one of Alias's *Maya Masters* for 2004. His new company, The House of Curves, will act as both a studio and a training school.
www.thehouseofcurves.com

ALEX MORRIS



Director, Hayes Davidson

Alex Morris qualified as an architect in 1990 and joined architectural visualisation agency Hayes Davidson in 1996, having completed over 40 buildings across a number of sectors. He is responsible for many of HD's landmark images, including the UK's Millennium Dome, and the Tate Modern art gallery.
www.hayesdavidson.com

JOLYON WEBB



**Principal Artist, Codemasters
Software Company**

Jolyon Webb moved into developing game art after years as a freelance illustrator. He works at leading videogame studio Codemasters as Principal Artist in the Central Technology Group: the company's internal research and development team.
www.codemasters.co.uk

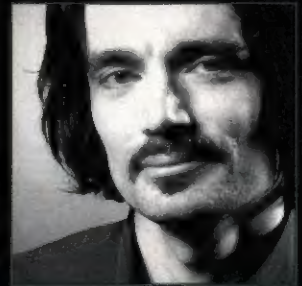
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Editor's perspective



Of everything I've heard or read this month, one thing sticks in my head above all others: that a single seat of *Hash Animation: Master* has all the technical capabilities of Industrial Light & Magic's entire effects department, circa 1989. Let's run that by one more time: a piece of software costing less than \$300 gives a modern artist all the power of a major Hollywood studio.

The observation was made by Paul Franklin of Double Negative, currently working as Visual Effects Supervisor on *Batman Begins*. Yet his comments were less a celebration of new technology than a warning as to what we may be losing if we allow ourselves to become blinded by the shock of the new.

"The problem is that modern software gives you so much so quickly, people get lazy. They don't investigate other ways of doing things," he said. "Anyone truly interested in film will find out about optical effects: how people tackled problems in the past."

Clearly, pre-digital effects work has little to teach us in terms of the way we now use 3D software. But what it can teach us is the way we harness the power of that software to tell a visual story. To modern eyes, the stop-motion animation of a movie like *King Kong* may seem crude. But what endures is the way that that animation makes an emotional connection with its audience; the way in which it forces us to think about how a complex, believable character can be created by the simplest of technical means. The Animation Director Barry Purves, who worked on the pre-visualisation phase of the Peter Jackson remake, describes how he organised a screening of the 1933 original for Weta's junior animators. "At the start, they were giggling," he says. "By the end, all I heard was, 'Wow.'"

This principle doesn't simply apply to film effects. One of the greatest strengths of the 3D industry is the way it brings together professionals from a range of backgrounds – artists, architects, game developers and programmers. It is vital for us to continue learning from one another, and from the artists of the past, if we are to continue to produce work of similar emotional quality.

You can read Barry Purves' comments on *King Kong* in our cover feature, which starts on page 36. Paul Franklin's thoughts on one of his own pre-digital inspirations, *The Thief of Bagdad*, can be found in a new regular column on page 111. As you'll have spotted, this is just one of a number of changes we've made to *3D World* this month. We hope that our new design and longer format make the magazine a more valuable 3D resource, but we'd like to hear what you, the readers, think. You can contact us at 3dworld@futurenet.co.uk. As ever, all your feedback is greatly appreciated.

JIM THACKER Editor

jim.thacker@futurenet.co.uk

After reading the preview for issue 59 of *3D World*, I hoped that it was going to be an anime-themed issue - maybe a couple of articles, along with a tutorial on how to do anime-style effects or how to model an anime character in *LightWave*.

Even though it was a little disappointing in the end to see only the one article, it was a nice touch to make it the cover story.

Messrs Osmond, Sharp, and Parkin put together quite a respectable list of titles, and their succinct and objective reviews for those films, games and TV series were eminently readable. I've been following the *Last Exile* series all this past year and I love the retro-mechanical style of many of the models used in the series. Having seen the original *Appleseed* movie, I've also been anticipating the DVD release of the new movie.

In 'Letter of the Month' from the same issue, Josh Danby makes some interesting points on the subject of anime and its struggle to enter the western cinematic market. I'm sure there are a number of reasons why these movies receive little attention outside of anime magazines, but one of them may simply be the lack of suitable material for promoting the films to Western audiences. Anime movies that are released here in the US rarely come with anything more than the standard movie trailers, while the typical movie-goer has come to expect much more.

Behind-the-scenes presentations have become quite common for any movie or TV show that uses any degree of digital effects, and are very good both at generating interest for the movie and boosting sales of the

DVDs. The few anime behind-the-scenes extras that I've seen are little more than a collection of

interviews. The voice actors talk about their characters, the director talks about his vision for the film, and the

character designer talks about his creative philosophies while showing very little of how things were actually created. This may be what the typical Japanese viewer wants to know, but I'm not that interested in what inspired a character designer to choose a certain eye colour or hairstyle.

Another factor that influences the potential audience size is whether the film is released as a dubbed or subtitled version. While there are exceptions, a subtitled film will almost always attract a smaller audience. The decision of what version to release often rests with the Japanese studio that owns the rights and if they choose to release a subtitled version, it could be said the studio itself - and not the Western distributor - is limiting the potential audience.

Jim Kangas | Via email



Our round-up of the best new Japanese 3D work: well received

Thank you for all your feedback on our round-up of new Japanese 3D work in issue 59. Judging by the emails we have received, it was a very popular article. Anime is certainly a subject we intend to return to in future issues, and we'll be taking all your suggestions for follow-up features and tutorials into consideration.

NO MORE 3DECEMBER!

I've just returned from the London 3December show [Alias' annual UK user event, featured in *3D World* issue 61 - Ed]. It's the third time I've attended 3December and, unless it's given a radical rethink, I can safely say it will be my last.

What was conceived as a bold, global, 'altruistic' gesture has been hijacked by a bunch of corporate, egotistical nerds and wannabes, with small 'Toys for Boys' mentalities - and even smaller imaginations.

This year's exhibition resembled nothing so much as a church-hall computer fair: a sad collection of blokes, tables, computers, and tacky video

presentations. I've seen more exciting sandwiches. Then we had the inspirational speakers: again, mostly a collection of corporate geeks, seizing their chance for 15 minutes of fame. Most are apparently impressed - and expect to impress us by - tired PowerPoint presentations, and hackneyed Lara Croft-style promo videos. Why? I think I'm right in saying that most of the attendees at 3December are looking to share tips, techniques and insights into how stuff actually gets done in 3D by the experts, so that they can go away inspired and try and apply what they've picked up in their own work.

Why not have an 'open mic' session, where Maya users (like myself) might be given a few minutes to share our thoughts. The session could be pre-booked and time-limited (say five minutes each), and might even be an interesting alternative to

chucking out games and T-shirts between the 'real' speakers. Either way, it would be more inclusive of the 3D community at large.

Now, I know what you're going to say: the masterclasses are what you were after. I thought so last year, so that's why I dug deep this time around, and booked the package of three for £165. Sadly, here too I was mostly disappointed. Only Roland Reyer, talking about hair dynamics, seemed to have really considered the audience and the business of imparting information that would otherwise have taken a long time to figure out for yourself.

All in all, 3December London was symptomatic of much that is currently wrong with the 3D industry. It remains caught somewhere between über-geekdom, and a *Boys Own*, testosterone-fuelled fantasy dreamworld. It needs to wake up.

Myles Cummings
Senior Lecturer in 3D Digital Design,
University Of Greenwich

We put Myles' comments to Mark Pammeter, Alias' European Director for Entertainment. He said:

"3December is intended to be a small community event: it isn't positioned as a major trade show. The presentations are not about Alias software, but what our customers are achieving with it, and there were very few PowerPoint presentations - most people had real content to show. We've previously considered an open mic session, but it would be very hard to keep it time-limited. However, we will re-think this for 3December 2005, and are in the process of sending out feedback forms to everyone who attended this year."

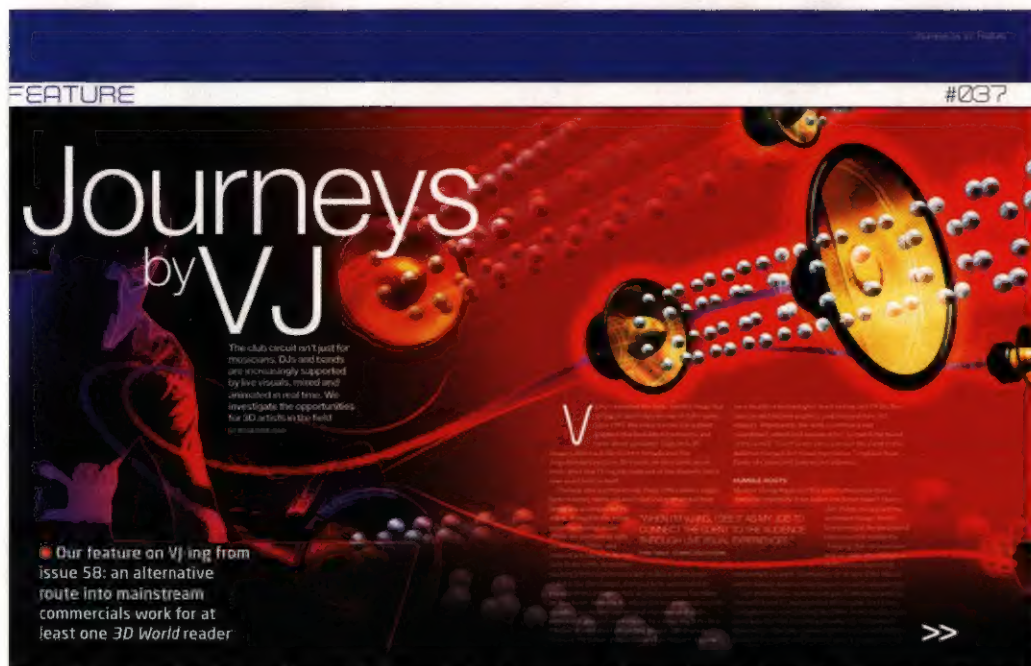
JOURNEYS BY VJ

I really enjoyed your article on VJ-ing [*3D World*, issue 58], and thought I'd write in to share my experiences in the hope that they might help other readers. I started off VJ-ing in London in 2001, teaching myself *After Effects*, then *Vue d'Esprit* and *LightWave*. I've now moved into broadcast and commercials work. If it wasn't for my background as a VJ, I'd not be in the position I am now.

From VJ-ing, I was chosen to create a six-part tutorial series for *International*



Alias' London 3December user event: 'hijacked by a bunch of corporate nerds and wannabes', contends reader Myles Cummings



DJ Magazine on how to create visuals for club events. I performed with my DJ heroes, and slowly my showreel got around. Eventually, a TV producer approached me to create 'atmospheric' visuals for an entire TV series. This blew me away, and really forced my skills to go into overdrive.

Then, about six months later, an ad agency saw my TV stuff and wanted me to get involved with creating commercials for a large retail client of theirs. This was a dream come true. Thanks to my love of music, I'm now also doing work I love and earning a great salary out of it. Not only does VJ-ing give you amazing amounts of freedom, it is also a great space to learn your trade. I love your magazine and I love feeling that 3D still has some elements of the Wild West.

Ross Webb | Via email

One of the great pleasures of working in a new field such as 3D is the scope it gives professionals to pursue new career paths. If you've got into the industry through a similarly

unconventional route, please let us know: you never know, we may run an article in a future issue...

THE NEW-LOOK CD

I can't help being a bit obsessive-compulsive about my 3D World cover CDs. It really bugs me to have them out of order! And when referring to the back issues and trying to find the complementary disk... I have to open every box to find the issue number. Would it be possible to put the issue number on the cover of the CD so I could easily organise my collection?

Bart Hays | Via email

Now that 3D World has moved over to its new, longer format, we've taken the decision to attach the CD in a clear plastic wallet on the inside back cover. You can find the CD contents listed opposite the disc itself, on page 114. Please send us your thoughts on the new design - we appreciate all your feedback.

MORE ELECTRIC IMAGE

I was very pleased to see the review of *Electric Image* in issue 59. *EIAS* is a very powerful tool, and one that I have been using for

Apologies to all you obsessive compulsives out there - we've changed how the CD is attached to the magazine. It's now on the inside back cover: see page 114 for details

years. I really hope to see more coverage of this wonderful application in future.

Richard Joly | Montréal

Just want to thank you for the *EIAS* 5.5 review. Its ability to render high quality images at very high resolutions has allowed me to express my vision.

Terry Calen | Via email

I subscribed to 3D World for several years in the past but stopped due to its lack of *EIAS* coverage. *EI* continues to be my 3D software of choice and I strongly believe in its future.

Jim Mulcahy | Tokyo

Do we detect a pattern emerging here? The good news for *Electric Image* users is that the new format of our Q&A section, which starts on page 74, now allows us to cover more software packages on a regular basis. These include *Houdini*, *Blender*, character animation tools - and, coming up next issue, *EIAS* itself. To ask our experts a question on any 3D software package, email us at: 3dw.qanda@futurenet.co.uk.

And if you're wondering what happened to the 'From the Forum' section that used to close Mailbox, we'll now be regularly incorporating forum feedback into our news and Q&A sections, although we will continue to print any outstanding individual threads on these pages. Post your thoughts online at: <http://forum.3dworldmag.com>

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SPECIAL THANKS THIS ISSUE

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IMAGE OF THE MONTH

Congratulations to Olivier Ponsonnet, who wins a copy of the Extreme Hires HDRI library, worth \$119. The prize is supplied by ART VPS, creator of the powerful PURE hardware 3D rendering cards. www.artvps.com



TRISTAN BETHE Robot Hopper
3ds max 6, Brazil r/s

"I think insects look like nature's little machines, probably because of their exoskeletons. So I decided to take that idea and go a bit over the top with it. I'm currently doing a lot of 3D for the cosmetics industry."

[e] tristanbethe@gmail.com

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OLIVIER PONSONNET
Strange Little Girl

3ds max 5.1, Paint Shop Pro

"I'm 22 and live in Bordeaux, France. I'm a self-taught artist and have learned everything through books and the internet. I use 3ds max with Paint Shop Pro for textures."

"I'm inspired by many things: movies, adverts, and stuff on TV. I also read a lot of french comic books and manga."

For me, every picture is more an artistic challenge than a technical one."

[e] re1v@free.fr

[w] www.reiv.fr.st

MATTHEW DARTFORD Maasai
3dsmax, V-Ray

"I've been influenced by artists such as Rodney Matthews and Philip Castle. After I left school, I enrolled on an illustration course with the desire to one day become an airbrush artist. Towards the end of the course, I was introduced to 3D, computers and Pixar! My ambition is to produce all my work. In the last year I have also started my own company in Norwich, doing what I enjoy and being my own boss."

[e] mat@mushroomgod.com

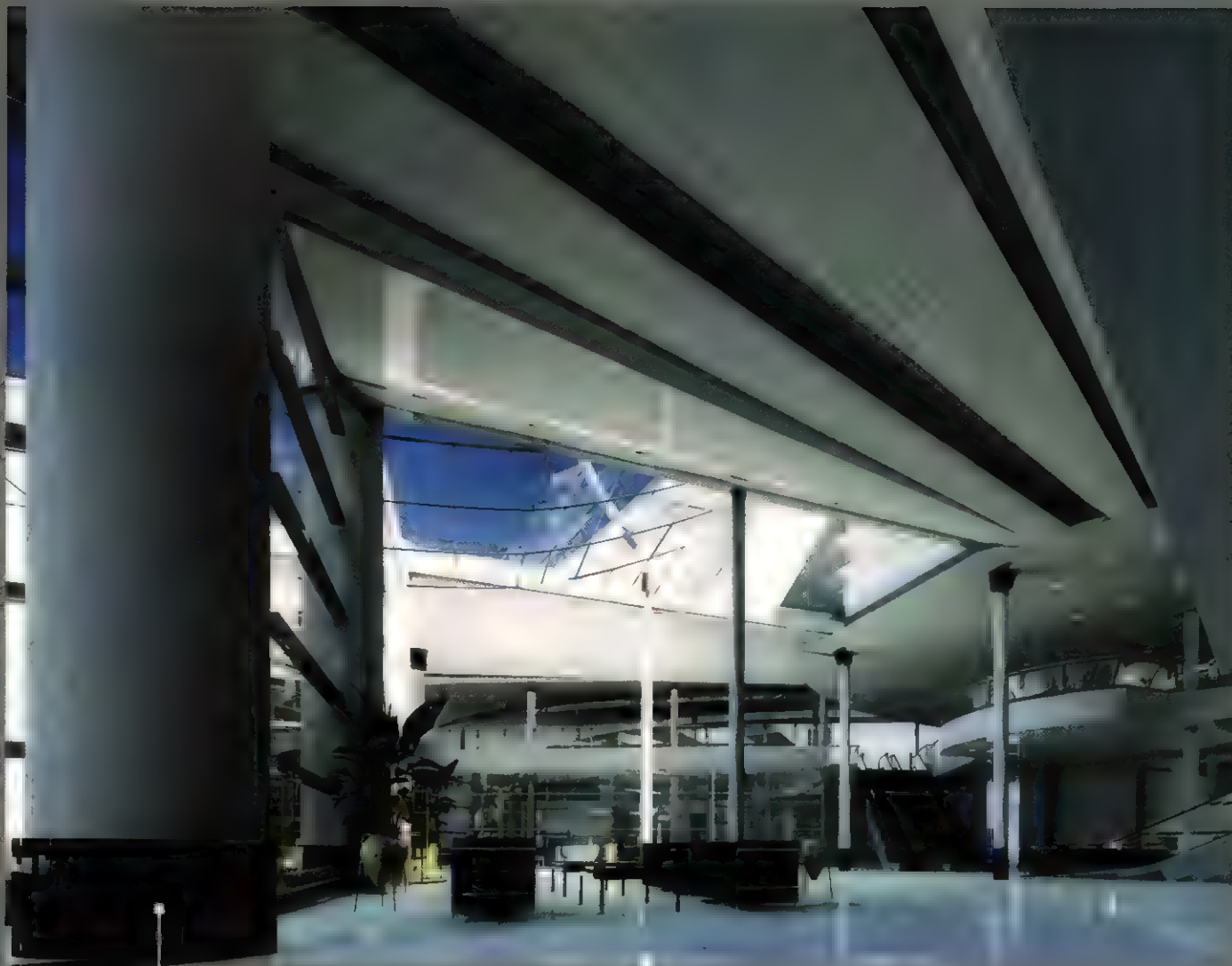
[w] www.mushroomgod.com





EXHIBITION

Send us your exhibition images | For postal address see page 9



CHEN QINGFENG Various architectural works
Autodesk VIZ 4, Lightscape

"I'm 28 and live in Xiamen, China. I currently work as a freelancer in a team of ten, and I mainly work on 3D rendering and animation. In the past, I've worked for many architects and always use radiosity. My ambition is to design many cool buildings in the future."

[e] cqfcqfcqf@vip.sina.com

[w] <http://cqfcqf.gfxartist.com>





ALEX FALCHI Charlie my clown
Softimage|XSI

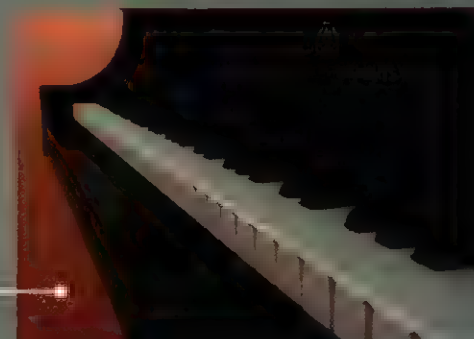
"I was born in Sicily. I'm a 3D animator and mainly do facial expression animation. I learned 3D at a private school."

I love to spend my time studying people's expressions and behaviours, and create characters from them. This fascinates me a lot.

I created this image as part of my personal portfolio, which is available on my website. I used *Softimage|XSI* and *mental ray*, and for compositing, I used *combustion*. I've also written a few tutorials which can also be found on my site."

[e] info@on3d.it

[w] www.on3d.it



AIDAN GIBBONS Grand Piano, Aston Martin DBR
3ds max, V-Ray, mental ray, Photoshop

"I'm 19 years old and study Digital Animation at university. Before that, I gained experience in one of Dublin's leading graphic design houses, Dynamo. The piano is made mostly out of primitives that have been chamfered, cut and extruded. For the Aston Martin, I used edge extrusion and *mental ray* to render. Both images were created for a university project."

[e] cybling@gmail.com

[w] www.cyblingdesign.com





Drugbust in Warehouse D

Rhinoceros

"I live in Brighton, Michigan and am self-taught. I'm a big fan of science fiction and cinema, finding design inspirat on from movies such as *Star Wars* and *Blade Runner*. I typically use *Rhinoceros* for modeling props and sets. *Poser* for figures. *Bryce* for rendering, and *PhotoPaint* for the post-production and texture work."

rhinoceros@comcast.net

**RENDEROSITY Junk***Cinema 4D*

"My day job as a graphic designer has me using C4D for packaging and merchandising. I've always been fascinated by using different techniques to create an image. When it comes to 3D art, I'm more interested in creating characters that don't already exist than reproducing objects that do."

(c) copyright mac.com

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**RENDEROSITY Get out of Jail***Strata 3Dpro 3.9, Poser, Photoshop*

"I created the textures in Poser 5 and Photoshop 7. The hardest part was thinking of names for the spaces because they had to include words about environmental regulatory compliance (not the most thrilling subject in the world!)"

(c) mitchell.houston@yahoo.com

(w) www.renderosity.com/homepage

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Be a part of the community

All the images on these two pages were created by members of Renderosity, the largest proven digital art community on the internet. Registration is FREE and takes only a couple of minutes. Membership provides you with your own artist's home page and a ready-made image gallery, displaying your work to millions of viewers every month and to over 170,000 like-minded 3D enthusiasts and professionals. Membership also entitles you to post comments and questions on the forums, chat or send messages to other Renderosity members, and receive a weekly newsletter on the best new products and special offers in the site's online marketplace. For more details, and to register for your free account, visit the site at: www.renderosity.com

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With thousands of products available in popular formats, the Renderosity MarketPlace has something for everyone: models, texture maps, special effects, and more. This



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Closing date: 31 May 2005

PRE-VIZ

NEWS / OPINION / ANALYSIS

Are games all work and no play?

GAMES INDUSTRY Lawsuits and surveys have exposed some appalling working hours in the games industry, but some studios are now prepared to work smarter, not longer

Welcome to festive cheer, courtesy of the games industry: "We initially attempted to go alpha in September, but while all the elements were in place, we didn't think the game was fantastic. So we put together a document of what we needed to do and went to work. After months of six- and seven-day weeks, everything became a bit of a blur. The worst thing was, we'd optimistically booked our Christmas party for 20 December but as it got closer, it became clear that we weren't going to make it. Even on the day, the caterers had set up the food off-site but the version just wasn't ready. So instead of going out to our party, we had everything packed up and bought into the office. We spent Christmas in the boardroom - it was really quite a sad affair."

While there's an almost tragicomic air to this anonymous true tale of self-imposed developer humbug and Scroogery, the issue of long working hours and a concomitant lack of social life among workers in the world of games has emerged as one which seriously threatens the future prosperity of the industry - as well as the health of its employees.

For example, in a recent survey carried out by the International Game Developers Association, a community-run organisation (www.igda.org), 20 per cent of respondents said they typically worked more than 55 hours per week. More worrying, however, were the hours racked up during so-called 'crunch' periods - broadly defined as times when all the development team will do is work and sleep in order to complete a project. Here, 30 per cent claimed they

worked between 65 to 80 hours, while 13 per cent clocked up over 80 hours. 18 per cent of respondents said their crunch periods lasted for more than two months. No surprise then, that over half of these workers expected to leave for pastures less stressful.

THE CRUNCH BUNCH

Of course, hearing about such working conditions won't come as much of a shock to anyone who's spent any time in the games industry. Anecdotal stories of not leaving the office for a month or taking speed every night for a week to hit a milestone are traded amongst staff as medals of honour. One publisher even attempted to get planning permission to build dormitories under its new office space, stopping only when they realised that this would incur additional tax for residential premises.

And it's been a threat to publishers' bottom line that has

recently ignited the issue. 2004 saw two high-profile - and still unsettled - lawsuits filed in the US, with publishing giants EA and Vivendi Universal Games facing claims from employees over the legality of long hours of unpaid overtime. The public consciousness was also pricked by a blog posting from the partner of an EA employee, the so-called "EA spouse letter", which charted one couple's growing disillusionment with the management style of a company which necessitates a minimum of six-day weeks from its workers.

As the largest and most profitable company in the industry, EA has often been a something of a whipping boy for wider concerns within the community. Many of its most successful games, such as

PLUGGED IN

DAZ GIVES VIC 'N' MICK AWAY

3D resource and software developer DAZ Productions has announced that from now on, its Victoria 3.0 and Michael 3.0 models, formerly priced at \$39.95 each, are available to download for free, indefinitely. What's more, anyone who has bought the full or upgrade versions is eligible for a rebate in the form of a voucher, valid for 90 days after it has been issued.

www.daz3d.com





Not everything is rosy in the games industry's garden. With many workers facing exhaustion, managers have serious steps to take

TALKING POINT | When it comes to the crunch...



Part of the problem is that team sizes have grown so rapidly, and studios just don't have the appropriate working structures, methods or management in place to cope. Instead, a gap now seems to be growing between the people who make games and the people who manage them. As long as that gap exists, there will be the possibility of crunch."

Jamie Walker
Game Producer, *Harry Potter and the Sorcerer's Stone*



"The reality within our industry is that the 20-something enthusiasts who are prepared to work unspeakable hours for an extensive period of time for the love of what they are doing are now rare, and many have matured into middle age. This coupled with the fact that the teams making games are bigger, means the industry is beginning to rethink the way that games are made. But, as with many other creative industries, I think there will always be a time when developers do have to put in longer hours."

Peter Molyneux
Creative Director, Lionhead



"Rare has seen its fair share of long hours, but to address the issue of excessive overtime and burnt-out employees, we're trying to be more realistic with schedules. Ensuring that you have a team which meets the required resources when you enter your full production phase is very important. Overtime isn't disappearing overnight, but managing resources and schedules, and sharing tools better will all play a significant part in easing the problem."

Simon Farmer
Production Director, Rare Software

the *FIFA Soccer* and *Madden NFL* series, are released on a yearly basis, increasing pressure on development teams. Equally, a company in EA's position—one of whose internal maxims states that not hitting a release date drops a game's sales by 30 per cent—is clearly going to do everything in its power to hit deadlines.

Yet, as Jamie Walker, Game Producer at the now defunct developer Argonaut, points out, fundamentally the issue shouldn't be marginalised as being about cash. "Crunch is not fixed by paying overtime," he says. "When all you do is work and sleep for weeks on end, it seriously threatens your health and your relationships."

Instead, he claims that too often crunch tends to be about bad management. "There will always be a few lates, weekends and some pizza, but real hardcore crunch is a management choice," he adds. "As a manager, you should know well in advance when more manpower is needed. By doing nothing, you're deciding that people will have to

work harder." As producer of the *Harry Potter and the Sorcerer's Stone* game, incidentally published by EA but developed externally, Walker proved it could be done. Despite a tight schedule to get the game completed for the movie tie-in release, he says he only worked over one weekend.

But perhaps the biggest issue facing the industry is how working hours will be impacted by the new wave of consoles, such as PlayStation 3 and Xbox 2. One UK studio that has radically revised its working hours recently is Rare Software. Production Director Simon Farmer warns that developers who don't address this just won't survive. "I think most will end up pushing their existing workforce harder," he predicts. "This will ultimately result in burnt-out and disillusioned employees, and will cause much talent to leave the industry and seek work elsewhere." ●

www.idga.org

FEEDBACK

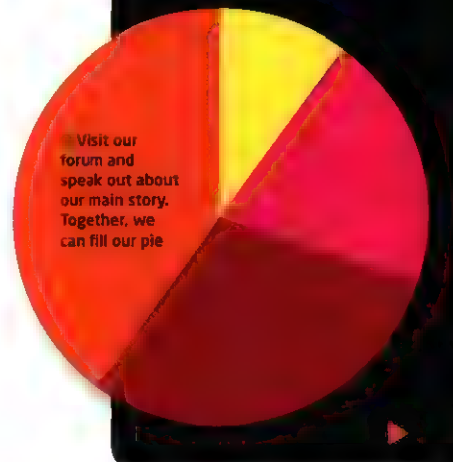
We want to hear from you on the issues affecting 3D artists, so from now on, once you've read our main news story on the facing page, why not visit our forum and post your reaction to it online?

We'll collate all your responses on our forums, add those of our advisory board and ask our contributors for their say, and hopefully we'll emerge with the definitive verdict on the issue of the month, which we'll then represent with a beautiful pie chart—much like the colourful specimen below.

This issue's question concerns overwork in the games industry—it's an issue that's prompted more forum posts, word-of-mouth and general buzz over the last few weeks than many games releases could ever hope to achieve.

So, what is the current state of play for a 3D artist at the average games developer?

- **Appalling**—games companies are hi-tech sweatshops, planning underground bunkers to house shattered workers
- **Difficult**—but the latest round of publicity should hopefully improve the lot of the downtrodden 3D artist
- **Harsh but fair**—hours are occasionally long in the games industry, but then the rewards are great, too
- **Normal**—stop whining, and name a creative sector that doesn't have long hours...



SOFTWARE auto-des-sys adds open architecture to its flagship modelling and visualisation app



So what implications will this have for *form•Z* users? Well, for a start it means that the tool can expand, now supporting plug-ins developed using its new Application Programming Interface, or scripts generated within *form•Z* using the new FSL (*form•Z* script language). The former requires some programming know-how, but the latter is aimed at a wide community of users, who will now at last be able to customise the program to suit their own varied projects.

form•Z is available for Mac OS X 10.2 and Windows, costing £1,495 for both platforms. Other new features include a new line renderer called Doodle, new primitives, and a vast number of tools, ranging from the Formula Curve tool to the Frame tool. From a first glance at the new additions - combined with the new architecture - this looks like a packed release. Try the demo at the website below.

www.formz.com

ERRATUM

In issue 60, we stated that corearsenal's three new Cinema 4D 9 tools were free downloads. While RALF and VIXOL are free, coreparticletools actually costs \$200. Visit the website below to find out more about the product range.

www.corearsenal.com




CLOSE UP 61

And as several of our eagle-eyed readers have pointed out, in issue 61's Close Up article about The Embassy VFX's excellent dancing Citroën ad, we listed the wrong software in our details box. The animation was of course created using *LightWave*, as we mentioned in the body copy of the article.

www.3dworldmag.com



SOFTWARE New name and new add-on modules take the popular landscape package to Infinity - and beyond



RAATHER THAN SIMPLY RELEASE version 5 of its 3D landscape tool *Vue Professional*, e-on software has decided to rebrand the product, now titled *Vue 5 Infinite*. "We feel that the 'Pro' tag is overused these days, and its meaning is tarnished," said Nicholas Phelps, e-on's President. "In keeping with our vocation of opening doors to human creativity, [our product names] choose to evoke rather than describe."

If your human creativity – and we're assuming that you're human, although if there are any readers of *3D World* that belong to other species, be sure to peck out an email and let us know – feels empowered by this, check out the company's other forthcoming releases: three expansion modules for *Vue 5 Infinite's* sister package, *Vue 5 Esprit Botanica* is a plant-editing tool, *DeepAccess* is an advanced browsing module, while *LightTune* offers advanced lighting. These can be bought separately, for \$69, \$59 and \$39 respectively, or as a bundle with the *Mover 5* animation expansion pack. The bundle, *Vue 5 Esprit* and all four modules, will cost \$399, and will be known as... *Vue 5 Esprit Pro Studio*. Confused? Yes, so are we. *Vue 5 Infinite* is due out any time now, and is set to cost \$599.

www.e-onsoftware.com

BOSCH 3D CARS

German 3D software resource provider Dosch Design has released a new collection of realistic cars for visualisation projects. *Dosch 3D: Cars 2004* contains 15 highly detailed textured models of realistic cars, ranging from the Pontiac Aztec to the Toyota Celica and the Jaguar S-Type. The models come in multiple file formats for Mac and PC, and the collection costs £119/€99.

www.doschdesign.com



WEBSITE OF THE MONTH

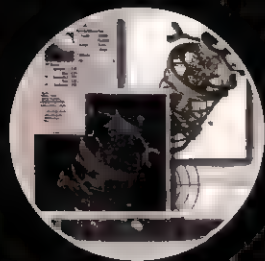
ED ARTISTS SHOULD

Innovative and

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Boolean functions. Meta
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Animate



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Settings. BVH motion.
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© Blue Moon Studio

Fei Fei CG Figure

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Shade 7
www.curiouslabs.com/go/3dworld



When it comes to Mickey's head, there's always facing to the front no matter where his head is," says Blur Studio's Tim Miller. "But you just can't distort a 3D model like that."

Making the Mickey

NEWS FOCUS How do you go about turning the world's most famous cartoon character into 3D? For new DVD Mickey's *Twice Upon A Christmas*, Disney left the daunting task to Blur Studio

Disney's decision to focus solely on CG animated feature films is well documented, yet it's only with the DVD release of *Mickey's Twice Upon A Christmas* that the studio's universally recognised mascot has made the milestone transition from his original cel-animated form into fully fledged 3D. Blur Studio handled the bulk of the work to produce 40 minutes of fully 3D cartoon animation starring Mickey and the rest of the Disney gang.

"I knew someone at Disney who we'd worked with before," says Tim Miller, Co-Founder and Creative Director of Blur Studio. "They saw our short film *Aunt Luisa* and realised we could also handle cuter stuff."

Blur is best known for a grittier style of animation as seen in their game cinematics such as *Warhammer 40,000 Dawn of War* (3D World Issue 60), but Miller says the Disney work also fits in with the company's philosophy. "We have a sort of dual artistic sensibility here. We'd like to do both styles of animated feature films—something like a *Warhammer* feature film would be awesome but also films that you could take your kids to. We believe those two

sensibilities can be mixed to a certain degree. At the moment though, there seems to be a better chance of a green light for something that's more in the Disney vein."

BLURRING 2D AND 3D

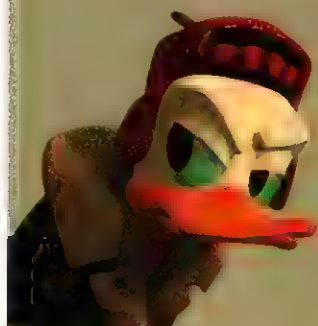
The original plan was to mix Blur's CG work with several minutes of traditional cel animation. Disney then decided to make *Twice Upon A Christmas* a wholly digital endeavour but by this time, Blur was unable to easily take on the extra work required. "They asked how much we wanted to handle, and we selected three of the shorts—*Belles on Ice*, *Donald's Gift* and *Mickey's Dog Gone Christmas*—plus the interstitials,"

says Miller. "The remaining two stories were then handed to Sparx."

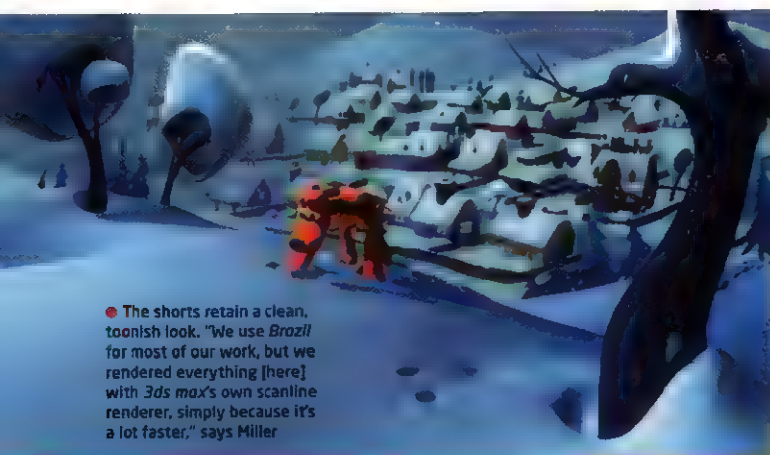
The project became Blur's largest to date, taking some 14 months to put together with a team scaling between 20 and 40 people. "Doing a single project on this scale was a different experience," says Miller. "It was good to learn how to work with a different structure, adapting our pipeline while retaining the speed and efficiency gained by working on turn and burn projects."

"MICKEY SAW WHAT WE WERE DOING AND REALISED WE COULD ALSO HANDLE CUTER STUFF"

TIM MILLER, CREATIVE DIRECTOR, BLUR STUDIO



"We weren't really supposed to replicate the sort of squash-and-stretch used by the 2D artists, but it made for better animation," says Tim Miller.



● The shorts retain a clean, toonish look. "We use *Brazil* for most of our work, but we rendered everything [here] with 3ds max's own scanline renderer, simply because it's a lot faster," says Miller



● "With traditional cel animation [the characters] are just laid onto the scenes and so really stand out, but we wanted our 3D versions to integrate with the backgrounds," says Miller

Surprisingly Miller wasn't too apprehensive about reinventing such an icon. "It was only midway through that it became a big deal," he says. "Disney became more focused on Mickey as a symbol of the company because of his upcoming birthday [he turned 75 on November 18, 2004]. So that brought a lot more executive-level attention, which is to be expected (and accepted), but didn't necessarily make the work any easier."

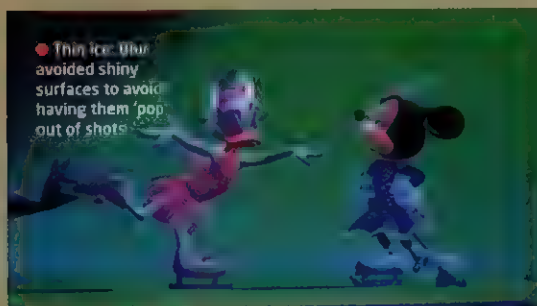
CEL-STYLE CONTROL

The 3D wasn't intended to match the cel animated style of old too closely, but as the project's profile was raised, Disney became more anxious that the lineage should be preserved. It was a challenge to stay true to the hand-drawn toons of old. "With something like *Toy Story*, there isn't a preconception built up over 75 years that defines what Buzz Lightyear should look like," says Miller. "There's also the fact that with cel animation, you can often cheat to get Mickey to move a certain way; he's not a walking, talking sculpture. Once you rework him as a 3D model, there's less latitude. We had to develop special tools to give us as much cel-style control as possible."

While Disney's decision to pass animation of its most famous creation to an external studio might be indicative of an outsourcing trend, the production methods favored by Disney Toon Studios are wholly different to those for the Feature Animation Division, which is building its own facility to handle work on *Toy Story 3*.

Miller hopes that the work on Mickey's *Twice Upon A Christmas* might lead to further Disney collaborations, as well as providing another stepping stone for the studio's long-term game plan. "We're looking forward to playing a larger role on future projects. Our ultimate goal has always been, and still is, full creative control!"

www.blur.com



● Thin ice: Blur avoided shiny surfaces to avoid having them 'pop out of shots'

TALKING HEAD | The Mighty Mouse in 3D

"Disney was obviously most focused on the Mickey Mouse character. They sent Andreus Deja, who had previously worked on *Fantasia 2000*, to provide pointers (and even hold seminars) on how to animate Mickey and capture his key characteristics. Our animators really took those rules to heart. With regards to the look of the character, though, the problem is that there's no one single Mickey Mouse template to work from. He looked different in 1940 to how he looked in 1970. It's not just a straightforward matter of replicating a drawing style."

Tim Miller
Creative Director, Blur Studio



● Pluto looks sheepish - or should that be Goofy? "We had to change our suite of facial animation tools to provide the flexibility needed to match hand-drawn animation," says Tim Miller





© Ken Dickinson

THE POLAR EXPRESS has reignited the debate about whether motion-captured photoreal humans can ever transplant actual live actors on screen. Tom Hanks portrayed five characters through the magic of body mo-cap and facial performance-capture. The results are impressive, and the film set a new standard for this technology. However, the characters are still a few yards short of the goal, and the problem lies in their eyes: you can mo-cap bodies and facial expression, but you can't mo-cap eyes, so the characters projected a 'videogame quality'. The eyes just aren't right - you couldn't stop noticing them in the movie.

Part of the theatrical transaction for stage and live-action film is that an audience member willingly suspends their disbelief in the non-reality of what is before them, in order to experience empathy with the characters. Photoreal animation creates a dilemma, because it aspires to mimic reality. As soon as a mo-capped human appears, the audience expectation is that the entire character will be realistic; if any part isn't believable, it ruins the illusion. Game players cut videogame animators a lot of slack when it comes to mo-capped humans and strange eyes; feature film animators don't enjoy that luxury.

In life, we make eye contact with one another maybe 20 per cent of the time. The rest of the time we glance around framing

thoughts, keeping a look out for predators, whatever. We focus at times close up and at other times far away, depending on the thought. For mo-capped photoreal humans to come of age, the animators will have to figure out how to give eyes random focus that's correlated to the thought process. This isn't likely to happen soon. Even if a method of random focus can be developed, how will that be co-ordinated with human thought? Humans are hard-wired by nature to recognise and respond to facial expression, particularly in the eyes. Our sense of sight is many times more powerful than our sense of hearing, and for a good evolutionary

reason - if we couldn't detect predators until we heard them, we'd all be prehistoric lunch.

So, are the eyes really the windows to the soul? They're as good a measure as we're likely to get. But the minute interplay between our brains, optic

nerves and light sensors is still a subject that's more easily explained by art than science, which is why programmers and mo-cap gurus are having such trouble: you can't mo-cap a soul.

The Polar Express reportedly cost upward of \$170 million. Because I'm writing this before we officially know how well it did, I predict that if the producers were hoping for a classic, the problem with the eyes will ultimately prove to be a deal killer. The movie should serve as a cautionary warning to other film producers that might be toying with photoreal humans. Get the eyes right, or don't do it at all.

THE EYES JUST AREN'T RIGHT - YOU COULDN'T STOP NOTICING THEM

ED HOOKS, AUTHOR, ACTION & ACTING MAGAZINE

www.edhooks.com

PLUGGED IN

GAMING SKILLS

Skillset, the sector skills council for the audiovisual industry, has announced a new accreditation scheme for degree courses relevant to the games industry. Publishers and developers will be invited to industry workshops to share their views on available courses, and to identify how they could help more graduates enter the industry with the right set of skills. www.skillset.org/interactive



+ POLAR OPPOSITES -

Each issue, we ask two 3D gurus to convince us they're right about a particular issue. This month, it's guns at dawn over mo-cap in the film *Polar Express* - is it good, bad or ugly?

Mick Morris is Managing Director of Audiomotion Studios, which recently won an award for Best Services and Outsourcing Company of 2004. www.audiomotion.com



PERFORMANCE-CAPTURE IS back in the limelight, thanks to Bob Zemeckis' remarkable movie *The Polar Express*, with Tom Hanks playing several characters. Financially it is reported to have been a success, having grossed \$260 million at the time of this issue going to press. In its first

five weeks it became the highest-grossing IMAX release ever.

The biggest criticism levelled at it by cinema goers, is that the characters' faces are lacking warmth and emotion. Eyes are important in particular, and it's true that we do have some difficulty believing these characters, because the performance is betrayed by a lack of emotion in the eyes.

That said, I think the team - Zemeckis, Hanks and Imageworks - deserves the

utmost respect for what it achieved here, in what is a highly ambitious project. Knowing how difficult it is to capture full body and facial for just one subject, doing this successfully for four characters is a massive achievement. The characters' eyes and lips have received criticism, but are two areas that were not optically mo-capped - this is impossible using current optical technology. Lip-roll is particularly difficult to get right. Huge improvements are being made in this area, with eyes and lips being more accurately tracked, and we will soon witness some extraordinary performance capture in productions of this genre.

Meanwhile, it has been proven that performance-capture and more traditional animation techniques such as rotoscoping and keyframing are not mutually exclusive. The beautifully accomplished Gollum in *Lord of the Rings*, played by Andy Serkis, is a fabulous example. The schizophrenic performance is so believable, it is genuinely moving. A combination of rotoscoping, mo-cap and keyframing, underpinned by great acting skills, it's a wonderful example of performance-capture succeeding.

Can this new crossbreed be put in the box called 'animation' any longer? It's not live action, and it's not traditional mo-cap as

we know it. We also understand that movies such as these would not be possible without the immensely talented teams of animators behind them. When these different disciplines all merge and the artists within them pull together, something new and

amazing can be created that is so much greater than the sum of its parts - as is the case with *The Polar Express*.

I believe that with the making of movies such as *The Polar Express*, and the creation of characters like Gollum from *Lord of the Rings*, we've arrived at the brink of something very special. A new era in CGI movie-making is evolving, where actors and animation artists from all disciplines will combine to produce truly innovative work. *The Polar Express* is a movie about 'lost innocence and belief'. I think it's time that we as an industry started to believe in performance-capture.

THE TEAM DESERVES THE UTMOST RESPECT FOR WHAT IT ACHIEVED HERE

MICK MORRIS, MD, AUDIOMOTION STUDIOS

PLUGGED IN

VICON AWARD

On 12 February, Vicon will receive a Scientific and Technical Academy Award from The Academy of Motion Picture Arts and Sciences. This is the first of its kind for mo-cap, in a year that's seen many films using Vicon technology. The titles include *The Day After Tomorrow*, *Harry Potter*, *Lemony Snicket* and *Spider-Man 2* - four of seven films shortlisted for the Best Visual Effects Oscar. www.vicon.com





Release 9

CINEMA 4D is the easiest to use, professional 3D software available. Now in its 10th year of development, CINEMA 4D Release 9 brings even more power to the 3D artist. Whether you're a 3D vet or a complete rookie, you'll find CINEMA 4D's toolset capable of achieving anything your mind can imagine.

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More Info:
www.maxon.net

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THIS SOFTWARE
BLOWS
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MAXON

Submerged ballet © Concept and Realization by James Wardfield



Set two years after the end of *Final Fantasy VII* the game, *Advent Children* reunites characters like Cloud Strife and freedom fighters Barret and Tifa. There are new baddies, such as Kadj and his hivers

Final Fantasy returns

MOVIE Advent Children sees *Final Fantasy* return to the big screen



Considering the almost bankrupting failure of its CG movie *Final Fantasy: The Spirits Within*, it's surprising that the now-merged Japanese games company Square Enix is just finishing another *Final Fantasy*-themed flick, due out this year. Of course, *Final Fantasy VII: Advent Children* builds on the lessons of the past: it's planned as a straight-to-DVD enterprise, and it's based on the characters and environments of *Final Fantasy VII*, Square's most loved (and commercially successful) PlayStation game, ensuring a global fanbase of millions.

The Spirits Within was put together by film staff from Square's now-defunct Honolulu facility. The *Advent Children* coterie, according to Co-Producer Shinji Hashimoto, is very different, consisting of Japanese artists who worked on the cutscenes which characterise the *Final Fantasy* games.

"The project originally came about because the game cutscene team had always wanted to make their own work," says Hashimoto. "Originally, we thought it would be a 30-minute selection of clips: it's since become a 70-minute long CG movie."

Although it uses some of the toolset from *The Spirits Within* - Maya remains the core package - the team is keen to improve on past mistakes. One reason for the incredibly smooth animation demonstrated in the 20-minute preview edit is down to the decision to switch to hand animation, with motion-capture reserved only for the complex hand-to-hand battle sequences. Other areas where heavy R&D attention was required to produce some amazing results included hair and soft-cloth animation.

Advent Children looks all set to be the latest posterchild for CG filmmaking: as was its predecessor. www.square-enix-europe.com



● One of the main criticisms of *The Spirits Within* was the wooden animation. This has been completely overhauled in *Advent Children*



Is the end finally nigh? I keep wondering when the CGI feature film bubble will burst, but they keep on coming. The number of projects in production right now is amazing, but since nobody ever lost money making a CG feature (well, except

for that film), there seems little reason to stop. Sooner or later, of course, the gravy train has to hit a bump in the track. The demand for this kind of movie is not infinite. Besides, they're going to get made faster and will be poorer in quality, and that will rub an audience up the wrong way.

The question, of course, is: "Are we there yet?" I don't know, but on the grounds that someone who's always wrong is just as useful as someone who's always right, we might learn something from Disney Feature Animation. In the late '80s and early '90s, Disney could do no wrong in animation. Culminating with *Aladdin* and *The Lion King*, it was all gold all the time. And while Disney was creating these 2D classics, it was building up expertise in 3D. Little bits appeared in its 2D films, and eventually it found itself in a position to make a 3D feature. *Dinosaur*, (3D World, issue one) an interesting film that didn't do spectacularly well.

Around that point, Disney decided that 3D CGI was a fad, and covered its bets in that area in the famous deal with Pixar. Disney proceeded to more or less hand control of the feature animation business to Pixar. It taught Pixar how to make an

Bad omen for CG features

Craig Zerouni, Production Consultant at Side Effects Software, is a worried man. Could the bubble be about to burst for CGI feature films? Is quality about to drop?

animated feature (instead of a clever short film), allowed Pixar to brand itself above the title, and declared that, within Disney proper, there would be no CG films made.

The debt that Pixar owes Disney is extreme. I remember Ralph Guggenheim, producer of *Toy Story*, speaking at a CG conference in London around the time the film was released. I'm paraphrasing badly, but he basically said that Disney taught Pixar how to develop and tell a story and, while it was painful to go through, it was an important experience.

Pixar obviously paid attention to Disney; it has relentlessly applied Disney's own storytelling skills to its films, and this single-mindedness has paid off - not just in blockbuster films, but in a reputation for creative integrity. *The Los Angeles Times* interviewed Brad Bird, Director of *The Incredibles*, just before the film's release. He said that when some of his friends (who worked in traditional animation) learned he was going to Pixar to make a film, they scoffed at him for 'getting trendy'. He told them: "I'm not going to Pixar because it does CGI; I'm going there because the company protects its stories."

Now it's 2005, and after spending over a decade building up CG expertise, Disney has almost no in-house capability (to be fair, it's ramping up what it does have again, but there are more features being made by outside companies than Disney is making itself). So, of course, the men in suits have rediscovered CG features, and now it seems that's all Disney will make. This is classic management by shiny object, and it's exactly the sort of thing which, with Disney's recent record, could be the bellwether for a 'market correction' in the audience for CG films. Could be. But let's hope not.



RELIGHT MY VAMPIRE

FILMEFFECTS Digital Dimension reveals a key technique used in the making of *Blade Trinity* - how to destroy a vampire, Hollywood style



AS ONE OF the facilities to work on the third *Blade* movie, *Blade Trinity*, California's Digital Dimension had to deliver a convincing version of a familiar effects staple: the death of a vampire.

Most of the shots feature bloodsuckers being 'ashed', and for CG Supervisor Jason Crosby, this was a challenge. "With 145 shots due in a short time frame, we needed an efficient pipeline - *Thinking Particles 2* and *mental ray* in 3ds max gave us a flexible solution. The 'ashing vampire' effects were driven from procedural shaders, which

contributed to the look of burning flesh and erosion of the creatures, and were the emission points for all the types of particles. We used *Thinking Particles* to create a simulation of the bones crumbling and bouncing on the ground with accurate edge detection. A script with an artist-friendly interface was used to adjust the shader, which in turn drove the particle systems, so changes were created quickly."

Our lead Q&A this month explains how to create a similar effect in *Lightwave* and *Digital Fusion*. For more details, see page 74 www.digitaldimension.com

The Oscars: a wild guess

This year's shortlist for the Oscar for Achievement in Visual Effects at the 77th Academy Awards has been released. Here are the contenders:


- The Aviator
- The Day After Tomorrow
- Harry Potter and the Prisoner of Azkaban
- I, Robot
- Lemony Snicket's A Series of Unfortunate Events
- Sky Captain and the World of Tomorrow
- Spider-Man 2




"Madness!" we hear you cry. What about *Troy*? Or *Alien Vs. Predator*? And what of *Thunderbirds*? Or even (gulp) *The Phantom of the Opera*...

After a heady mix of debate, Lemsips and Harbo jellies, 3D World's prediction is that *Spider-Man 2* will emerge victorious, just edging out *The Day After Tomorrow* and withstanding a late surge from the underrated *Harry Potter* movie. Don't agree? Well don't just sit there - let us know. Our forum awaits your opinion. <http://forum.3dworldmag.com>

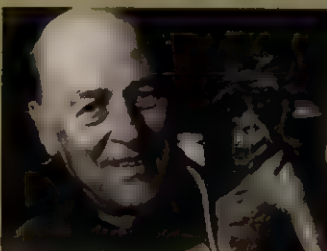
EVENT HORIZON




ANIMEX, 31 JAN-4 FEB, MIDDLESBROUGH, UK
For the sixth year running, the Animex International Festival of Animation will welcome pros and newbies into its events, where you can meet the best, attend awards, and brush up your skills
www.animex.net



IMAGINA, 2-5 FEB, MONTE CARLO, MONACO
The trade show that keeps on going. Imagina has two decades under its belt, and this year's event will have the usual mix of 3D goodness, including architecture, games and special effects
www.imagina.mc



ANIMATED EXETER, 7-19 FEBRUARY, EXETER, UK
Animated Exeter, now in its sixth year, presents over 100 animation films, with exhibitions, workshops and special events including this year the rare chance to see legendary effects master Ray Harryhausen.
www.animatedexeter.co.uk



GDC 2005, 7-11 MARCH, SAN FRANCISCO, USA
In March every year, game artists and programmers head to sunny San Francisco for five days of tutorials, talks, awards and industry news. Meet leading developers and indulge in experimental gameplay
www.gdconf.com

Cut-price messiah

SOFTWARE As pmG unveils a cut-down personal version of its messiah:studio rendering and animation software, we ask: "Does the world really need another low-price 3D package?"

P mG has announced the release of a cut-price version of its dedicated 3D animation and rendering software *messiah:studio workstation* offers most of the functionality of its big brother, *messiah:studio professional*, but at \$299, is almost \$700 cheaper. So what's the difference?

"*messiah:studio workstation* is configured as a single node, standalone animation and rendering system," said Lyle Milton, Co President of pmG. "Conversely, *messiah:studio professional's* animation system can be plugged into many commercial host applications, and it allows for unlimited render nodes. Also, since *pro* has a Host API, custom connections can be made for virtually any 3D app [Plug-in development toolset] *messiah:develop* is also exclusive to *pro*. However, *workstation* does have our plug-in API as well, so programmers can still write plug-ins for it"

BROAD BAND

The release of *messiah:studio workstation* marks yet another 3D heavyweight appearing at the low end of the 3D market. Does the move indicate a desire for a much broader user base? "Our user base tends to be very diverse - we haven't targeted a specific segment," said Milton. "However, we've been receiving lots of requests for a lower-cost entry to *messiah:studio*. This has included students, hobbyists, freelancers, and studios needing to control per-seat costs. *workstation* is designed for them."

PmG maintains it has always promoted the idea of using its software in conjunction with other applications, and this cohabitation is a necessity in the area of modelling, since *messiah* doesn't have a built-in modeller. "Our users are happy with the way *messiah* handles loading objects from external modellers," said Milton. "What's interesting is



● Is the difference between the *pro* and *workstation* versions of *messiah* merely a case of: "you say po-tay-toe and I say po-tah-to?"

that we're getting requests for adding functions to our API for geometry editing; third parties really want to jump on this, and we're currently exploring the possibility of providing those functions"

As for whether there are too many 3D apps at this price point for *messiah:studio workstation* to be a success, Milton remains confident. "The market might be saturated with software but, since it's now financially feasible to own licences of different [applications], artists are less loyal to specific software packages. Artists are also finding it necessary to be well-versed in many different applications, which is a good thing for the market overall. It has also been a good thing for us, because many artists are discovering our products for the first time."

Visit the site below for further information about *messiah:studio workstation* and *messiah:studio professional*
www.projectmessiah.com

Production line

The month's other releases in brief



STITCHER EXPRESS

Realviz has released *Stitcher Express 1*, a cut-price version of its panoramic image-stitching software. The product features semi-automatic stitching and automatic panorama alignment and costs \$119.

www.realviz.com



MM PRO PRICE CUT

And in other news, Realviz has a new pricing structure for its high-end tracking software, *MatchMover Pro*

3.1. The software now costs €3,000 (\$3,500), down from €9,600 (\$11,000).

www.realviz.com



XSI AND ATI OFFER

Softimage and ATI have joined forces to offer *Softimage|XSI Foundation* and ATI's FireGL T2-128 graphics

card for \$599. The package is aimed at providing a cheap way into 3D.

www.softimage.com; www.ati.com



APPLE XSAN

Apple has shipped *Xsan*, its Storage Area Network file system. This 64-bit cluster for OS X offers concurrent file-level read/write access to shared volumes - a boon for editors. It costs £699.

www.apple.com



LEVEL HEADED

Charles River Media has published *Game Level Design* by Ed Byrne. A comprehensive reference for level design, the

book is aimed at designers interested in the subject as a career. It costs \$49.95.

www.charlesriver.com

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For more information go to www.discreet.com/3dsmax

3ds max /chris

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Ford Mondeo 'Sea Creatures'

For this recent UK TV ad, effects house Glassworks was required to bring a bizarre metaphor to life in 3D: the similarity between a saloon car and a jellyfish...

BY TOMAS HERSUM

DETAILS

TITLE

Ford 'Sea Creatures'

EFFECTS COMPANY

Glassworks

PRODUCTION

Company

Radi 4 Media

DIRECTOR

Stuart Douglass

RUNNING TIME

3 seconds

FIRST BROADCAST

October 14

WEBSITE

www.glassworks.co.uk

TEAM SIZE

24

TIME TAKEN

Six weeks

SOFTWARE USED

Softimage
mental ray, inferno

When they're not following the breakdancing moves of saloon-robot hybrids [*3D World*, issue 61], most car ads these days are heavy on metaphors. It's a concept that effects studio Glassworks is partial to, having worked on a previous Ford called, quite literally, 'Metaphors' – apt, given that it populated city roads with giant jellies, washing machines and other objects intended to represent flaws in rival cars.

That its latest spot again finds Glassworks doing its bit for Ford is something of a coincidence. The work originated due to the studio's relationship with Stuart Douglass, the director who utilised Glassworks' expertise for a *Gladiator*-themed Pepsi spot featuring Beyonce, Britney Spears and Pink.

The new ad, designed to sell the benefits of the 16-valve diesel engine in the new Mondeo ST TDCi, dives into the oceans to make its point: "The agency had already settled on the idea of featuring two specific deep-sea creatures [the Angler Fish and the Ctenophore *Pleurobrachia* – a jellyfish-like organism], although they also wanted them slightly modified," explains Alastair Hearsum, Head Of 3D at Glassworks. "The latter creature, with its ability to get out of danger quickly and easily, was intended to represent the Ford Mondeo."

FISH SOURCE

The BBC's highly acclaimed underwater documentary series, *The Blue Planet*, provided a useful reference in the early stages of production, along with Glassworks' own extensive reference library – and, of course, the internet. "We looked at a whole range of fishy things, at creatures that were translucent, and squid and jellyfish," says Hearsum.

The two deep-sea denizens were modelled in XSI, with Hearsum working on the Ctenophore using polys with a subdivision mesh, and James Mann building the Angler Fish

with NURBS – "a personal preference rather than a model-based decision," says Hearsum. The two were animated separately and combined at the compositing stage: "It's not as if they actually touch or even cast shadows on each other."

SQUIDS IN

The Angler Fish didn't demand a particularly sophisticated rig, but the physical properties of the gelatinous Ctenophore were less straightforward. Not only is the translucent creature blessed with a soft body containing a unique propulsion system, it also produces cycles of iridescence as it beats a rhythmic path through the water. "Our version has the same type of glimmer, but the structure has been altered so it resembles a squid," says Hearsum. "The tricky thing was simulating the lights that shimmer up and down."

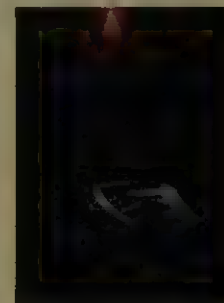
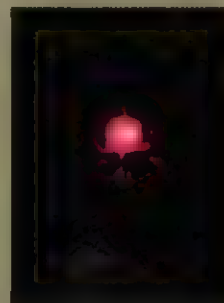
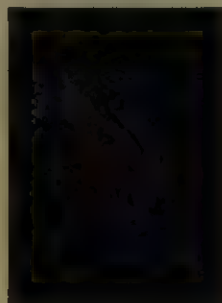
Instead of attempting to simulate the exact properties of the Ctenophore's body, Glassworks came up with custom shaders that would mimic the shimmering effect. The cycling of colours driven is driven by the Ctenophore's angle to the camera, just as it would be if you were viewing the real thing, but the colours are chosen using a lookup table, rather than through needlessly complex light calculations. "When it comes to rendering, they don't cast light as such, so we didn't have to worry about them generating shadows," says Hearsum.

Although Hearsum describes this ad as an artistic challenge, rather than a technical one, the results are perfectly photorealistic: an impressive feat given the notorious difficulty of rendering underwater scenes – not to mention the bizarre nature of the Ctenophore itself.

'Sea Creatures' is showing on major channels across the UK. You can also view it at www.glassworks.co.uk. Find out more about the Ford Mondeo at www.ford.co.uk.

FREEZE FRAME

An Angler Fish looms large, surrounded by inky blackness. Its huge translucent teeth are visible as it opens wide on its prey: the Ctenophore, whose body shimmers with coloured lights as it pushes through the water. The Angler Fish attempts to snap down on the Ctenophore, but the smaller creature accelerates to safety. Switch to a view of the Ford Mondeo, its black bodywork highlighted by strips of coloured lighting that resembles the sea creature. More close-ups of the car follow, as it speeds through an urban environment.





INFOCUS | The technical secrets of Glassworks' underwater world

01

Because the action takes place in the deep sea, the studio couldn't use visual cues: "Rendering the scene with a depth fade helped," says Glassworks' Alastair Hearsum. "We didn't use particles to fill out the water - we added soupy bits."

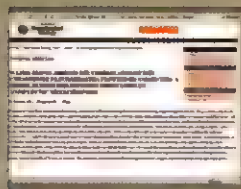
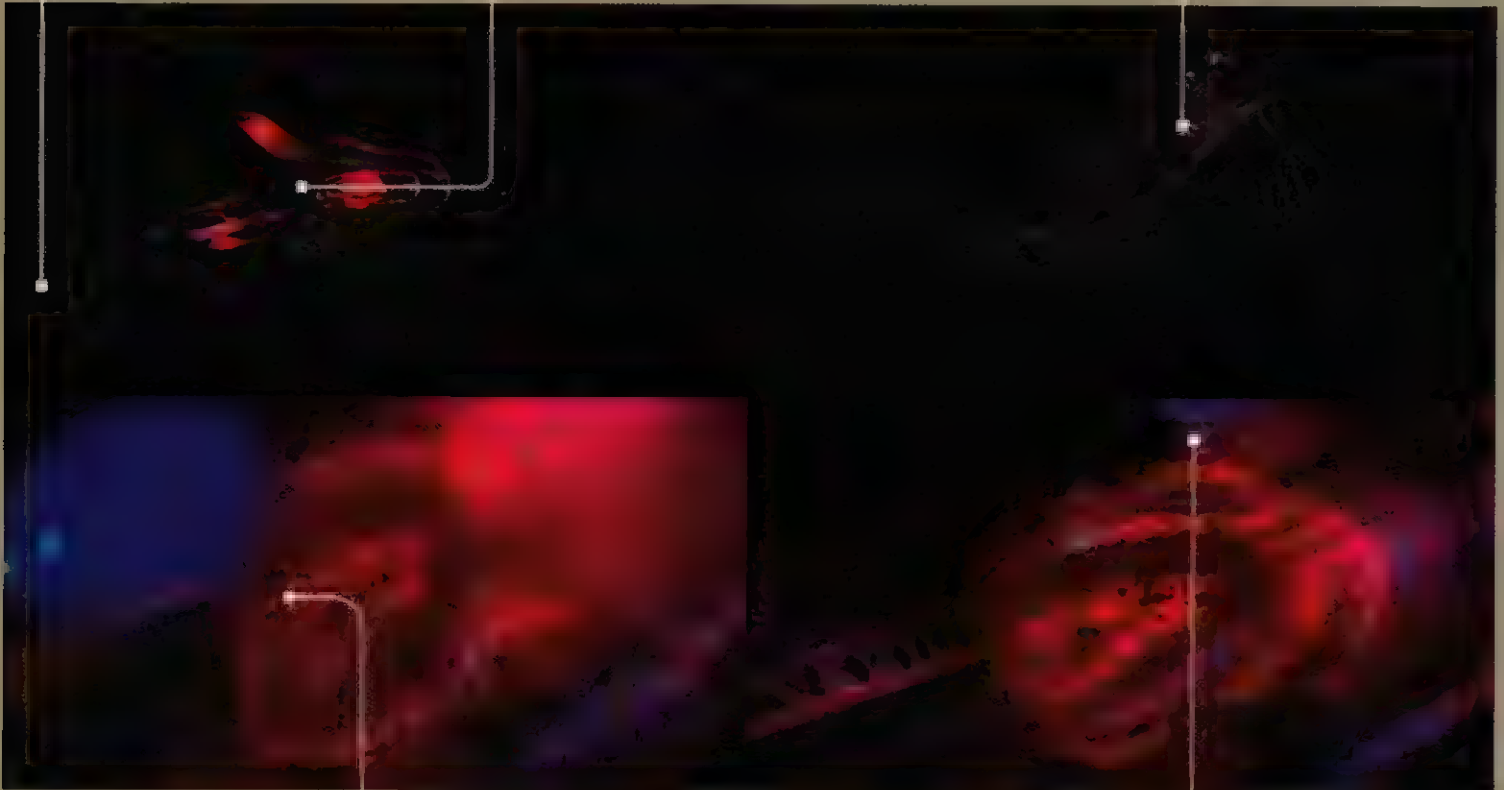


02

The Ctenophore's propulsion system is like a jet engine. Water is drawn towards each row of flaps, which then push the water backwards. With the combined force from these, the creature is able to dart out of danger.

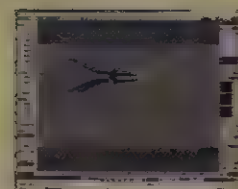
03

The Angler Fish is a predator of the deep ocean, "In terms of animation, it doesn't do much beyond open its mouth," says Hearsum. "Much of the skeletal detail is for the jaw section, with weight mapping controls applied."



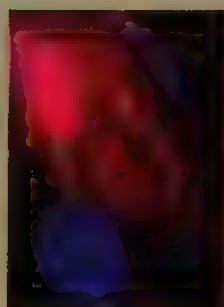
04

Extensive biological research was not required. "The amount of detail in scientific papers is usually overkill for CGI work: we're faking the world, not re-creating it atom by atom," says Bruce Steele, the studio's Head of Special Projects.



05

"We mixed up [the flaps on the Ctenophore's body] with a randomised lattice, applying an incident shader with a lookup table to a rainbow of colours. As they flap, the angle changes and a different colour is selected," says Hearsum.



Projects round-up

Our pick of the month's best new CG work: bad-guy germs, a flying shark, Leonardo's cockpit and a 3D orgasm...

01 DOMESTOS COMMERCIAL

This is the first of two downright dirty ads that we're featuring this month. With CG animation courtesy of Passion Pictures, it features three peeing gnomes defending their filth against the evil enemy: Domestos. "The germs were designed by comic book artist Richard Dolan," says VFX Supervisor Chris Knott. "We translated Dolan's drawings into 3D CG models using *LightWave*, and rigged these for movement. Pictures of insects and blugs were used as guides for the germ's skin textures." www.passion-pictures.com

02 H-1 RACER FLIGHT FROM THE AVIATOR

The Aviator tells the story of Howard Hughes, who broke the world speed record in 1935. CafeFX recreated this flight for the film, building CG versions of an H-1 Racer in *LightWave*. "CG shots are intercut with live-action shots of Leonardo DiCaprio in the cockpit, distant shots of the radio-controlled plane and people watching from below," says Digital Effects Supervisor Danny Braet. "We tapped the Radiosity Light Engine to calculate light bounce and reflectivity for the plane's metal surface." www.cafeFX.com, www.miramax.com/aviator

03 COCO DE MER COMMERCIAL

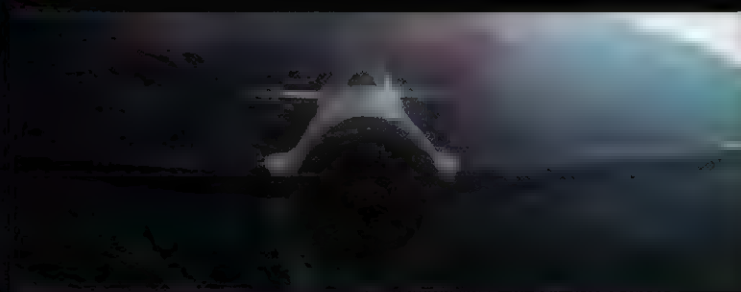
And now, orgasms. How does yours feel? No, we haven't gone mad - this is the title of the new Coco de Mer perfume ad, a mix of lavish visuals and sound effects. Glassworks' 3D Operator Vaclav Cizkovsky explains: "We used *Maya*, *Shake*, *flame*, and our own particle system which allowed us to manipulate millions of particles with a library of renders complete. *Inferno* artist Duncan Horn imported the 3D to perfect the elements. The layers were treated in *After Effects* by the ad's directors, LynnFox." www.glassworks.co.uk

04 KASABIAN 'CUT OFF' PROMO

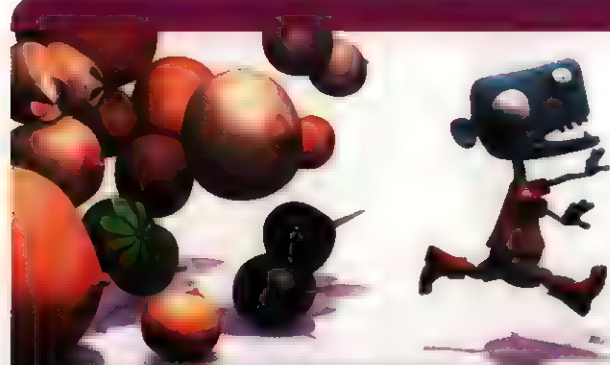
A flying shark attacks people in New York. *Jaws* re-envisioned by Martin Scorsese? Nope, just the new promo for rock act Kasabian, created by VT's CGI division, The Hive. "The shark is entirely 3D," says Senior *Maya* Animator Christian Anderson. He and *flame* Operator James Allen had nine days to track, animate and render 14 shots. "Making its mouth look real was a challenge. Good textures and clever lighting helped achieve this," says Anderson. "The shark was composited in *flame* and *Inferno*." www.vt.co.uk

05 LONDON 2012 OLYMPIC BID VISUALS

Are there live... For London's bid to host the Olympics (see page 68), Designhive produced 25 images of the planned new stadium, as Director Julien Fijou explains. "We created a model of the stadium bowl in *3ds max*. A lot of time was spent taking photos of crowds, sporting action and athletes, which were manipulated in *Photoshop* to bring the render to life. For existing venues, 2012 commissioned photographs. We camera-matched them with the live overlay and added 3D elements in *3ds max*." www.designhive.co.uk







MeNTaL RoY

Wired from coffee and Benylin imbibed on his latest 3D all-nighter, our new resident columnist **Mental Roy** decrees that hollow-eyed digital zombie love objects and buxom Valkyrie warrior girls should no longer be considered 3D art



VERY FEW TRULY 3D phenomena ever make it into the papers, but last year's standout 3D story was - unfortunately - this world's very first virtual beauty pageant, Miss Digital World (www.missdigitalworld.com). If you visit the site, you can see

animations, view provocative swimwear poses, and if you click on the bios of these ersatz beauties, you can even find out what their hobbies are - and look, they range from modern art to martial arts. Isn't it just so cute, so worthy of coverage? CNN thought so. *The Washington Post* thought so, too.

Ho-kay. Before we go any further, you do realise that if this is your kind of thing, then this is pretty sad stuff, right? You do realise that if a REAL GIRL saw you slaverling over this stuff, then that REAL GIRL would be honour-bound to tell all her friends in the real world that you are officially a REAL SAD ACT, and then there'd definitely be no chance of you EVER successfully making it with a REAL GIRL like her.

Let's suppose, quite reasonably, that this leads you to being sat, slumped in your bedroom late at night, ready despite the familiar wash of guilt to actually 'fully express yourself in a physical way' over one of these digital zombies. Next time this happens, just ask yourself what kind of Travis Bickle ends up hunched, crusty mouse in shaky hand, monitor's blue glow projecting back an overlaid reflection of this shameless midnight strum - if this is you, then congratulations, because *that's* newsworthy. You'd better get cleaned up and call CNN.

And while we're on the topic of digital females, what's with these huge-breasted girls in bikinis fighting dragons? I see they're still around. Great - that's just great. Yet can someone tell me who in their right mind is actually aroused by those?

Since we're busy strapping on our skimpiest leather bra for this one, let's take stock of the subject matter. How did these women ever end up in a situation where they were sent out to fight dragons? What kind of medieval fantasy society is it that fights its wars in this way?

"What's that I hear? Thorgar, Son of Wargasm reports huge mythical flying monster lizards terrorising the village? Why, we'll send out our largest-breasted people right away - because after all, THEY'LL BE THE BEST WARRIORS, RIGHT?"

Please stop it. Please, stop holding back your 3D brethren who work 18-hour days to tirelessly coax a beautifully nuanced and cadenced animated performance from their labour of love, only to flick to some online gallery and see not their work, but some undead-eyed, grapefruit-breasted Valkyrie so grotesquely misproportioned she couldn't reach round her freakish bosom to undo her bra clasp, let alone get out there and behead a fire-breathing dragon. Stop dragging their labours down to the myopic depths of your sordid, morbid world, stop making the general public associate every serious 3D artist with your hideously misdirected psychosexual artistic drive - please just stop being the albatross around the neck of 3D. Above all, hear this - stop resorting to the easy artistic option. From now on, you **MUST** resist the lure of the titty morph target. That is all.

**YOU MUST
RESIST THE
LURE OF
THE TITTY
MORPH TARGET**

PLUGGED IN

ESCAPE COMPO

London training facility Escape Studios has extended the deadline for entries to its Escape Awards from 21 January to 11 March, 2005. The awards offer entrants the opportunity to gain some valuable work experience at top UK companies. Visit the URL for entry info. www.escapestudios.co.uk/awards



PUREly for the Mac

HARDWARE The Mac welcomes hardware rendering as ART VPS releases its PURE card for OS X and the G5

ART VPS, the Cambridge-based developer of 3D rendering hardware, has announced the PURE raytrace-rendering PCI card, optimised for Apple's Mac OS X and Apple's G5.

The PURE card accelerates 3D rendering by distributing it across an array of eight chips, offering users features such as quick previews, multiple area lights, motion blur, secondary illumination, and *RenderMan* shaders.

ART's announcement was made at San Francisco's Mac Expo show in January, fuelling speculation about how much weight Apple is willing to throw behind 3D on the Mac. "Following the announcement, the response has been very strong, which is great," said Peter Taylor, Sales Manager, ART VPS. "The Apple market is very into getting new gadgets - initially for us, it's a case of developing the technology, proving it, and then seeing where we go from there." The PURE PCI card for Mac OS X costs £1,899 (\$3,399).

www.artvps.com





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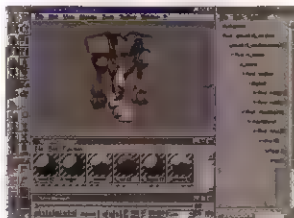
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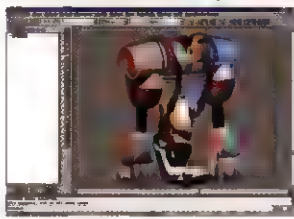
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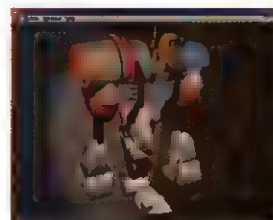
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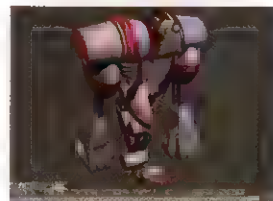
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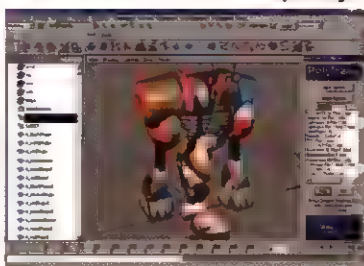
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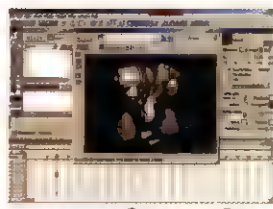
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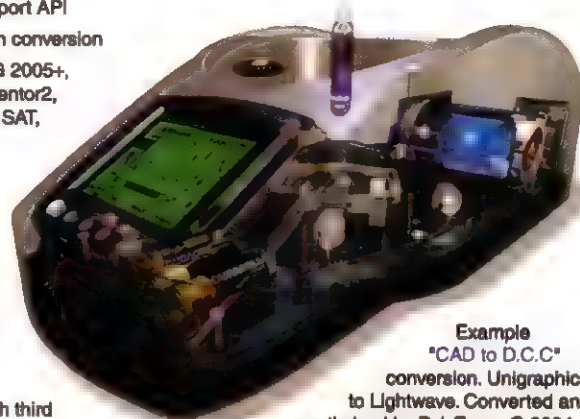
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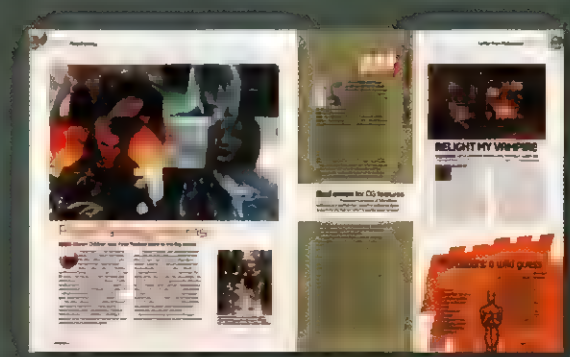
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KING KONG

WAR OF THE WORLDS

BATTLESTAR GALACTICA

THE HITCHHIKER'S GUIDE TO THE GALAXY

What do the films and TV series above have in common? Answer: they're all being remade using CG effects. 3D World returns to the era of the visible string to ask the artists working on each remake what the animators of today can learn from the effects pioneers of the past

A recent poll in leading UK science-fiction magazine *SFX* revealed its audience's top 50 special effects sequences of all time. Thousands of cine-literate readers cast their votes, yet out of the top ten, only four

sequences involved the use of CG. Should we be surprised?

Well, not really. Laughable though its worst excesses may be, the heyday of science-fiction B-movies is frequently romanticised as the Golden Age of special effects. Somehow, the spectacle of flickery swordfighting skeletons, UFOs on visible strings, and robots covered in tinfoil has come to be considered innately superior to the CG effects of today's blockbusters – perhaps on account of having been created out of something 'real'. Ray Harryhausen's creatures, for all their stop-motion stuttering, still seem possessed with his performance and personality, while long before hair simulation was ever conceived as a possibility, animators' thumbprints imprinted on the rabbit fur covering *King Kong* made his hair billow and come alive. And exactly what is it about childhood TV series that inspires so many misty-eyed post-pub reminiscences?

Nostalgia haunts modern visual effects, forever comparing the new with the old. The more that 3D technology advances, the more it is present at the back of audiences' minds that the digital effects that they are witnessing are mere high-tech fireworks when set alongside the blood, sweat and tears – not to mention artistic craftsmanship – invested in a floating brain from planet Arous, or a primitively composited Martian warship.

And if audiences see today's special effects in relation to those of the past, then it's a dead certainty that animators and filmmakers do too. Although this is a largely unconscious process, when it comes to a remake, audiences and filmmakers are finally forced to examine their attitudes to special effects face to face.

LIVING IN THE PAST

Yet there's only so many times you can watch *Star Wars*; and in any case, studio execs are determined to interrupt our reverie so much so that 2005 could be dubbed the year the cinema (and TV too, for that matter) stood still. For a start, the world's most famous director is currently shooting his take on sci-fi's most enduring storyline with *War of the Worlds* (due out in the summer), while TV projects like *The Hitchhiker's Guide to the Galaxy* (please let it be good) and *The Magic Roundabout* (please don't let it be too bad) are also embarking on big-screen outings. Elsewhere, hardy perennials *Doctor Who* and *Battlestar Galactica* are being given a fresh lick of digital paint, ready to materialise before a new audience.

Over the following six pages, *3D World* dons a giant rubber lizard costume and catches up with the people responsible for revitalising some of these science-fiction staples. We asked what influence the work of the pioneers of pre-digital effects is exerting on their modern counterparts, and what today's 3D animators can learn from the VFX of the past. After all, at this rate, your next job as a CG artist is more than likely to be a remake, so don't say we didn't warn you: that you're next. YOU'RE NEXT!!!

WAR OF THE WORLDS

ILM is currently helping Steven Spielberg create a 21st century remake of one of sci-fi's oldest stories. But is there anything the mighty Hollywood movie machine can learn from previous versions?

Fifty years after its most significant movie incarnation, H.G. Wells' classic tale of a worldwide invasion by Martians who forgot to arrange their travel jobs will once again crash down in movie theatres across the planet.

This time, it will have 21st century effects, orchestrated by one of the highest profile sci-fi directors in the universe. By putting Steven Spielberg at the helm, and casting superstars Tom Cruise, Tim Robbins and Miranda Otto (Eowyn in *The Lord of the Rings*), Paramount Pictures is clearly aiming to turn this remake of 1953's *War of the Worlds*, which in its day was an equally lavish, special effects-oriented blockbuster, into a modern-day hit.

Visual effects for the film are currently underway at Industrial Light & Magic in San Rafael, California, with Oscar nominee Pablo Helman and multiple Oscar winner Dennis Muren acting as Co-Visual Effects Supervisors.

Although Effects Supervisor Gordon Jennings won an Oscar for Best Special Effects for his work on the original, don't look for Helman to borrow many of his techniques—or many techniques from any '50s sci-fi film for that matter. "One of the films we all look at, obviously, is *King Kong* and the work by Ray Harryhausen," he says. "I also studied the 1953 version of *The War of the Worlds* because of this film, looking for camera positions and to see what technology was used. In terms of the techniques, some of the pyro is similar, but we're mainly using the work to inspire us. It was cutting-edge at the time. We look at it and smile in a warm way."

STORY PROMPTS TECHNOLOGY

Helman points out that one of the major differences between then and now is the use of animatics. "We're really spoiled now because we can simulate effects before we do the effects," he says, explaining that when Spielberg steps onto the set, it's almost as though he's already been there before and explored which lens to use. "Once he's on set, he sits down and changes things, but because he has already been on the set [in effect], and has such a sharp mind and sharp eye, he shoots the visual effects quickly."

"The photography in this film is phenomenal," Helman adds. "We're not using bluescreen. There's nothing wrong with shooting bluescreen, but there's something special about being on location with a huge fog in the forest, with actors feeling like they belong there."

But although the technology has changed dramatically since the 1953 movie, Helman believes that his goals are the same as Gordon Jennings'. "I'm not that concerned with the latest techniques, or the latest technology," he says, "because I think it's more

important to have the story and support a story. If you don't have the idea, the technology doesn't matter. When you do have a good story and good ideas for great audience moments, everyone sits down and decides what new techniques and new technology will come into play. The same thing happened 30 or 40 years ago."

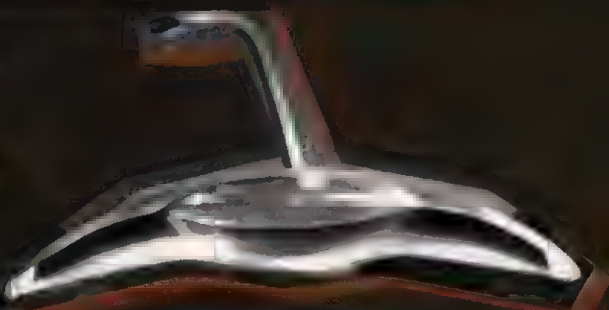
Helman offers an example from the current production to illustrate his point. "I was doing a shot a couple of days ago about vegetation growing in the water. But because the director put reflections in the water, the shot became about the actors, not the effect. Even though the visual effect is in the water, what we're playing to is the acting in the reflection."

As in the original, the audience's fear is generated by the actors' reactions. While today's technology may be more sophisticated, Helman believes making otherworldly VFX look real is becoming more difficult.

"We're teaching audiences visual literacy; the kinds of things they should look at," he says, "and their expectations go up and up. We've created a generation of people who are very difficult to fool." But fooling the audience into believing otherworldly effects is what all visual effects artists learn, and strive to do.

"Let's say you're shooting a simple greenscreen shot with people in a car and the camera outside," says Helman. "We all pick up on the difference between a good camera move and one that's not good. It's like the old comic in the newspaper that shows you two pictures that look the same but with minor details different. Picking up what's different is something we share with all the generations of visual effects artists: the eye for what's real and what's not."

Helman suggests that today's technology could actually be hindering those efforts, though. "One thing the older generation had that we're losing," he adds, "is a sense of scale. We work with people at ILM who have done miniatures on stage for 25 years, and they've



developed an eye for the right scale. But more and more, visual effects artists don't have a sense of how big something should be, how fast it should move, how quickly it should go from A to B. They don't know that, physically, you couldn't move a camera that fast in five frames. I think that visual artists are losing that sense of physicality and reality."

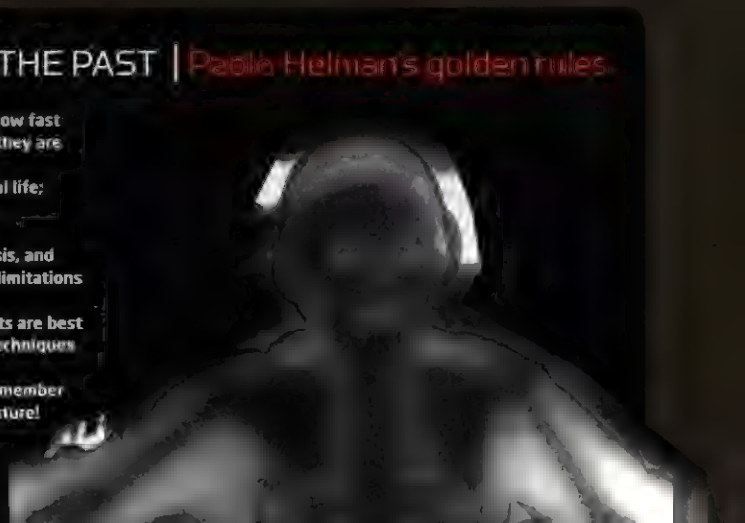
SUNDAY MORNING CAMERA CLUB

So how would Helman advise an artist who's worried they're losing touch with reality to get that sense of physicality back? "Well, on Saturdays and Sundays, I think we should all pick up a camera," he says. "It's difficult to be aware of the physical limitations of what you're trying to accomplish when your field doesn't have any limitations."

Another suggestion on the subject is to use a mixture of effects. "There's a tendency to think only one way," he says. "But visual effects are best when they're a combination of live action, special effects, visual effects, and miniatures. My job is to fool everybody's eye, and to do that I need to use different techniques. When I do CG, I have to think about how something breaks, the simulation, the debris, whether it looks repetitive or not. Yet there are a lot of things you can get with a miniature and with photography. With a miniature, I can just blow it up."

LEARNING FROM THE PAST | Pablo Helman's golden rules

- 1 Develop a sense of scale. Learn how fast things really move, and how big they are
- 2 Make sure you that you study real life; study whatever is in front of you
- 3 Pick up a camera on a regular basis, and make sure you learn its physical limitations
- 4 Mix up your effects. Visual effects are best when they're a combination of techniques
- 5 Don't over-complicate things - remember that you can just blow up a miniature!



**"MORE AND MORE VISUAL
EFFECTS ARTISTS DON'T
HAVE A SENSE OF HOW BIG
SOMETHING SHOULD BE, HOW
FAST IT SHOULD MOVE"**

PABLO HELMAN, CO-VISUAL EFFECTS SUPERVISOR

THE HITCHHIKER'S GUIDE TO THE GALAXY

According to Shynola, responsible for the Guide graphics for the upcoming *Hitchhiker's Guide to the Galaxy* movie, the original TV series should still be considered a source of inspiration for animators **BY RACHEL ELLIOTT**

Legend would have it that, one night in 1971, Douglas Adams was lying drunk in a field in Austria, reading *Hitch-Hiker's Guide to Europe* by Ken Welsh, when he had an idea for a project would change the world of science fiction. It would morph from a radio series to a book, a TV series, and a computer game, not to mention websites, plays and comics – and even a bath towel!

Four years since Adams' passing, summer 2005 will finally see *The Hitchhiker's Guide to the Galaxy* hitting cinemas, as a Disney blockbuster directed by Garth Jennings (one half of music promo team Hammer & Tongs), and written by Adams, Jennings, Ben Garant and Karey Kirkpatrick. It has been strongly influenced by the original TV series, particularly in the case of design studio Shynola, responsible for the graphics of the Guide itself.

Previously best known for their short-form work, Animator/Director Chris Harding and his team have spent a year immersed in the project, and 2004's D&AD Awards for Best Direction and Best Animation have been cleared from desks to make space for the task.

The original TV graphics, by Rod Lord and Pearce Studios, were avant-garde. Although resembling modern computer displays, they weren't actually CG; instead, they were created by animating reversed-out line

drawings on acetate, with lighting gels used for colour. The resulting clean, pseudo-wireframe style still looks great today. "I watched the series first time round and loved it," says Harding. "The visual style is massively effective – deceptively so. They got it spot on and it translates well into 3D. I'm fond of wireframe rendering as a visual style – we've just finished a video for Beck that features lots of wireframe animation."

Other cult classics have had an impact on the

making the *Hitchhiker's* miniseries. I got to see the sets, and sat in Slartibartfast's flying pod – I was disappointed to discover it didn't really fly."

A key challenge for the Shynola team was to not be unduly influenced by something that had impressed them so much. "We tried not to let the original graphics shape what we were doing for the film, but it was tough! The original had a huge impact on me, and went some way to make me want to be an animator. It puts

across each point with elegance and economy: there is nothing about it I don't like. However, we wanted to do something quite different in [our own graphics] – you'll have to wait 'til the movie is out to see what I mean!" Discover the ultimate answer in cinemas worldwide from 6 May.

"THE ORIGINAL MAKES EACH POINT WITH ELEGANCE AND ECONOMY. THERE'S NOTHING ABOUT IT I DON'T LIKE"

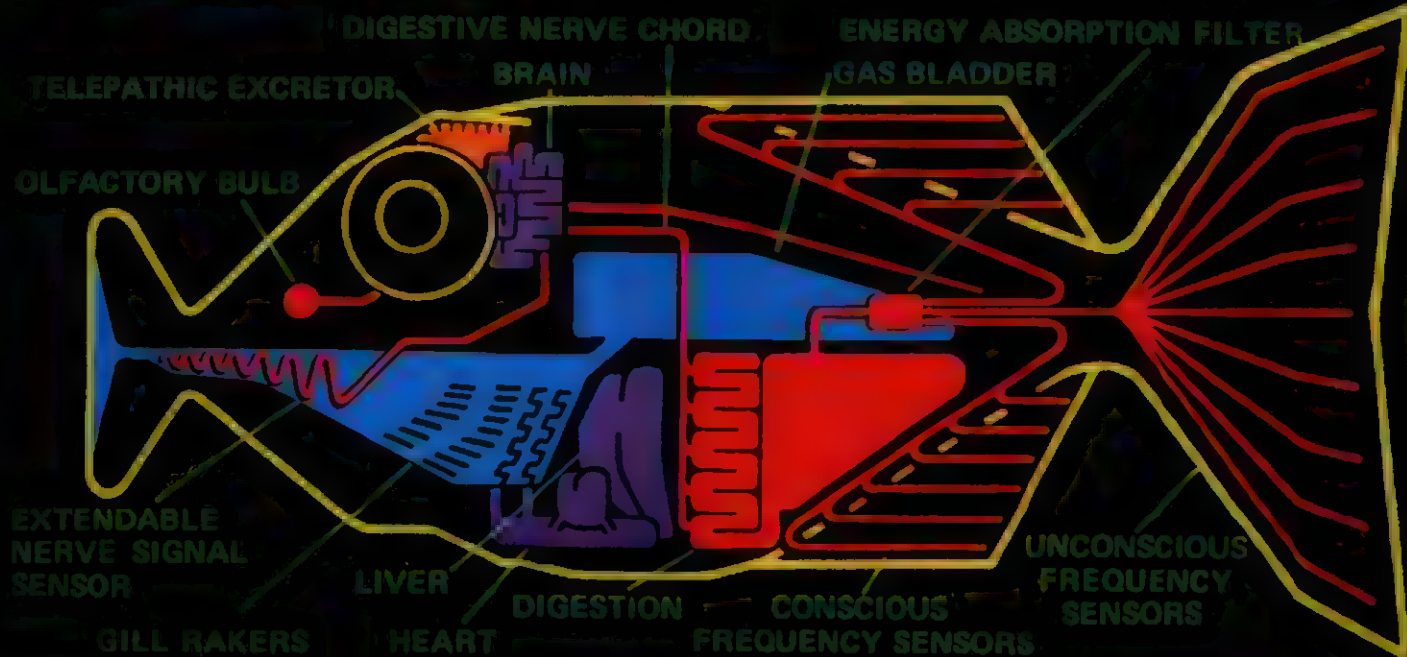
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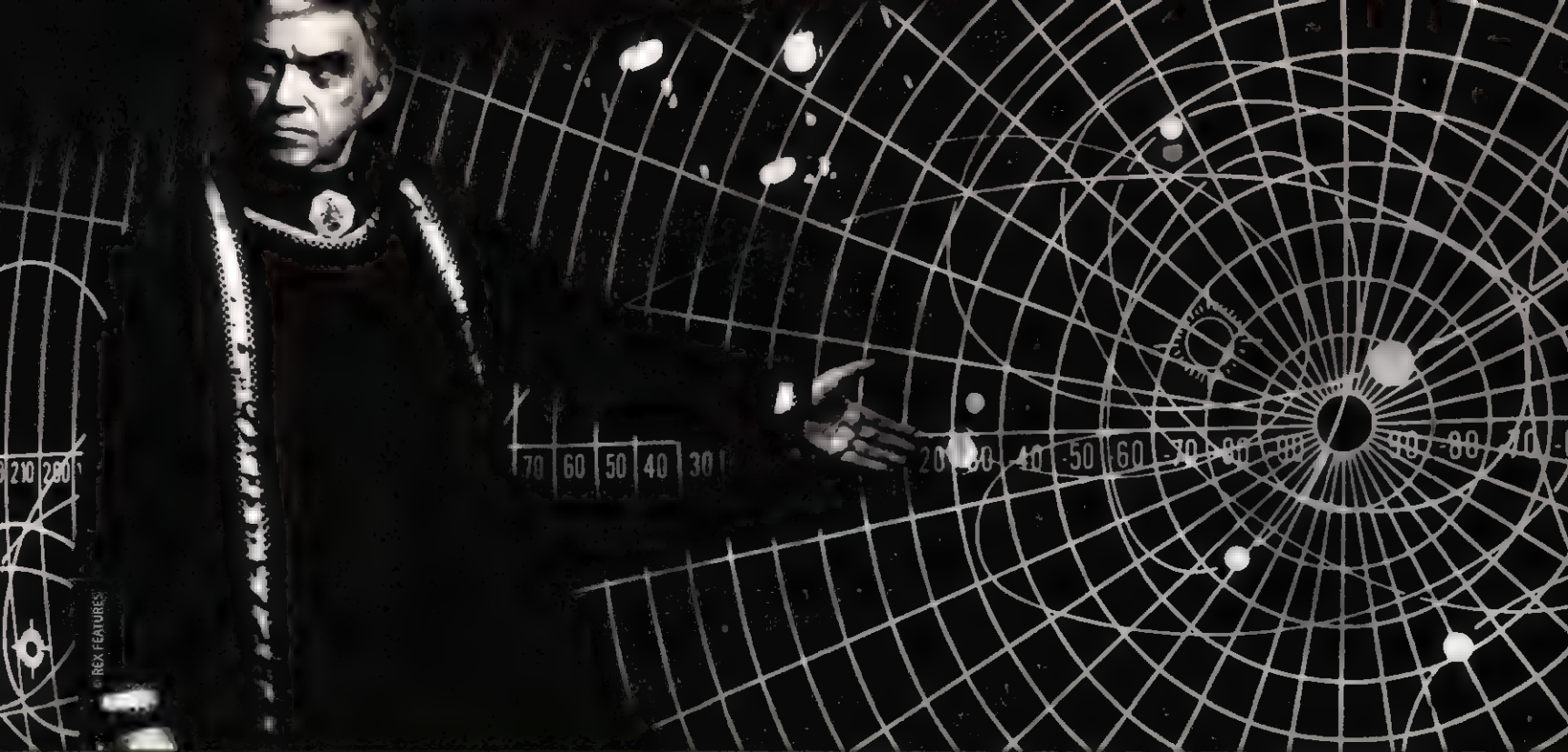
Shynola portfolio. *Forbidden Planet* has some fantastic effects that inspired us when we were making Blur's *Crazy Beat* video. *Tron* was also a big influence."

There's been another sci-fi influence, too. While most of us had a hamster as a pet, Chris spent his childhood with a Dalek. "My dad worked on the original *Hitchhiker* series. He worked in the BBC special effects department during the '70s and '80s, on *Day of the Triffids*, *Blake's Seven* and *Doctor Who*. K-9 was one of his designs, and when I was a kid we had a Dalek in our garden. I was taken into his workshop when they were



BABEL FISH





BATTLESTAR GALACTICA

How a 1970s sci-fi series about space refugees on the run from robots wearing futuristic crash helmets went from semi-schlock to a gritty reimaging in the present day **BY ED RICKETTS**

Although largely dismissed at the time as a kitsch *Star Wars* rip-off, the 1978 TV series *Battlestar Galactica* holds fond memories for many, and has always retained a rabid fanbase. Rumours of a sequel had been rife in the industry for years, until in 2003, after many abortive attempts, a new miniseries finally aired. Now *Battlestar Galactica* is back with a fully-fledged series, and looks set to continue.

Zoic Studios was responsible for the updated effects in both the new productions. "Pretty much everybody who worked on the miniseries and the series are fans of the original film," says Lee Stringer, CG Supervisor at Zoic. "Quite a few of us worked on Richard Hatch's proposal for a second series about six years ago (Hatch played Captain Apollo in the original programme). That never got anywhere, but it brought *Galactica* back to the interest of the studios."

VIPERS AND VERITÉ

The first series had a rich heritage in terms of its effects crew. "Most of the people who worked on the original *Galactica* had worked on the first *Star Wars* film," says Lee. "There was a year-odd break where there was nothing going on for them until the next *Star Wars* film, so the same people did pretty much all the same shots. For everyone in my generation working

on the show, those guys had a huge influence." Lee and his own crew walked a fine line between paying homage to the original show, with its ardent fans, and updating the style for a more modern audience. They had previously worked on *Firefly*, another space series that was eventually cancelled, and it was this that caught the eye of the producers. *Firefly* employed a documentary style with 'handheld' cameras, shake, imperfect focus and other cinéma vérité effects.

The technique evolved in the new *Galactica* miniseries to give a 'darker and grimmer' look. But Lee explains, "there were quite a few places where we said,

"THE ORIGINAL MODELS WERE BUILT FROM KIT PARTS. SO WE BOUGHT SOME OF THE SAME '70S KITS FROM EBAY" **LEE STRINGER, CG SUPERVISOR**

oh, there's a shot in the original series that looked like this, let's see if we can make something similar to it. We made a list of cool shots in the original we wanted to replicate. A few of them we did manage, but unfortunately most of them we never had time to put in. Things like the Viper going down the launch tube, we tried to give it the same sort of look."

Indeed, most the ships in the so-called rag, rag fleet, which appear in the background of shots, are replicas of original models, reconstructed from photos and



miniatures. "The original models were built from kit parts; they'd buy boxes and boxes of battleships and tanks, take those parts and use them as details on the ships," Lee explains. "So we bought some of the same '70s kits from eBay, and we made CG kit parts out of them. We had a library of around 120 pieces, all the same as the original parts. A lot of it was probably lost, a lot of it was subtle and minimal, but hopefully some of it showed up. We also tried to make the CG ships look more like they were miniatures than CG."

Though Zoic would have loved to consult the original effects crew, that proved impractical. "Trying to track some of them down was difficult. We did get hold of a couple and pick their brains a bit, but not as much as I'd have liked. I have spoken to some of them and they're almost howled by the interest in that space thing they did 25 years ago."

The new series of *Battlestar Galactica* is currently showing on Sky One in the UK. It airs in the US on the Sci-Fi Channel from 14 January. For more information, or to whet your appetite for the series, visit the channel's mini-site at: www.scifi.com/battlestar.

KING KONG

Inspired by Willis O'Brien's original stop-motion work, when Weta Digital began work on the remake of this much-loved classic, the first thing the studio did was to call in a veteran traditional animator **BY BENJAMIN SVETKEY**



When Peter Jackson, fresh from the success of the enormous *Lord of the Rings* trilogy, announced that his next project was a remake of *King Kong*, more than a few eyebrows were raised. Bushy, simian or otherwise.

It had been tried before in 1976, and the resultant dud was both a critical and box-office failure. But if anyone could pull it off, Jackson was a prime candidate, particularly when backed by the might of *Lord of the Rings* effects house Weta and its advanced CGI work.

The original 1933 film is such a classic, both technically and artistically, that Jackson knew he would have to approach his remake very carefully. So in 2003, the veteran animator, writer and director Barry Purves was summoned to New Zealand to act as animation director for pre-visualisation at Weta Digital.

Although possibly not a household name, Purves' work is ubiquitous and much loved in the industry. In shorts such as *Next*, *Screen Play* and *Hamilton Mattress* he demonstrates how puppetry, stop-motion animation and storytelling can effectively bring a character to life.

"My history has been working with puppets, and people seem to like the performance I can get out of them," he explains. "About three and a half years ago, Weta phoned and asked if I could go and work on *Gollum*. I hadn't had any experience of computers, and I couldn't go at the time because I was doing *Hamilton Mattress*. They asked me again 18 months ago to work on *King Kong*, and I was there five weeks later."

Like Jackson, he was also a huge fan of the original 1933 *King Kong*. The chief technician and animator on that film was Willis O'Brien: a stop-motion pioneer who, Barry says, was the spiritual father of Ray Harryhausen.

"You can't underestimate the significance of that film," he enthuses. "There had been other animated

films before with characters, bears and foxes and things. But I think Kong was the moment on the big screen when a technique became an art form."

As an example, he cites the moment following the titanic fight between Kong and the Tyrannosaurus Rex: "After all this awful brutality, he picks up the jaw of the T-Rex and just wobbles it to make sure that it's dead. And suddenly you realise, yes, he's thinking. Suddenly Willis O'Brien was acting Kong. It wasn't a technical thing of 'how do we make these dinosaurs move?' - there was real thought behind it."

KING KONG COUNTRY

"There's also the final scene when Kong is on the Empire State Building and he's being shot. The last thing he does is to reach out and touch Ann to make sure she's alright, then falls to his death. It's heartbreaking, and it's an 18-inch puppet!"

Over five or six weeks, Barry, Peter and the young animators at Weta explored ways in which a 25-foot-tall gorilla might really behave. "The first thing Peter Jackson wants from that ape is character: how would he react in that situation, how would he hold the girl, how would he walk through the jungle? So we came up with minutes and minutes of pre-viz 'gags', bits of business. So hopefully there's a lexicon of actions which Peter is drawing on at the moment."

"We studied the original *Kong* fight scene, and what's lovely is they don't go at it hammer and tongs. They weigh each other up. They're not just fighting machines, they think about it and look at each other like wrestlers. It's the thinking that goes on that makes these characters come alive."

Surprisingly, many of the young animators at Weta had never seen the original, so a screening was arranged for everyone. "Some of them started giggling at the animation at first, but by the end they were just saying 'wow,'" Purves says. "There's a good story, good characters, and the effects serve the story, instead of the other way around."

Most of all, as perhaps befits a traditional animator with more than 25 years of experience, Purves is passionate about character in animation. "There was a lovely scene in the second *Harry Potter* film where Dobby is running along a corridor, wearing this little scrappy vest," he says. "As he ran, the sleeve of the vest fell down over his shoulder, and he just sort of hooked it up again mid-flight. That little unexpected detail made the whole sequence credible."

Purves also cites *Gollum* as a good example of what can be done with digital acting techniques. "We've all

seen films where the tech has been used, shall we say, as an exercise, where there's absolutely very little point to it. With digital animation, you need a good animat on director sensitive to the details of performance behind it. A good animation director will put little moments into the performance that turns what could otherwise be mechanical animation-by-committee into something seemingly spontaneous."

GREAT APE

For a 72-year-old film, the original *King Kong* is a remarkable achievement, but Barry isn't oblivious to its occasionally 'ropey' animation. For instance, the ape's weight, he says, isn't conveyed properly. "As an animator I think, well, he's 25 feet tall, he would have taken a bit longer to swing his arm through that space. Sometimes the timing is of a small puppet; as a general rule of animation, you have to slow things down to make them look bigger." Kong's general animal nature is also somewhat askew in the original. "He's very vertical. Gorillas are basically quadrupeds, they walk on all fours, with a slightly diagonal gait. So some of the animal behaviour is missing - just the way he holds his hands isn't quite right. The proportions are a bit strange too. But it's not about being realistic, it's about being credible; and the original is pretty credible."

Nevertheless, the oldest animation adage still holds true. "It's still there, and it's still magnificent," he says. "There are emotions coming out of it that are as good as those of the actors, if not better in some cases. That's something we should all remember now; we may have this new technology, but it's still about performance. All this digital stuff still has to have story and character."



**"YOU CAN'T UNDERESTIMATE
THE SIGNIFICANCE OF THE FILM.
KONG WAS THE MOMENT ON THE
BIG SCREEN WHEN A TECHNIQUE
BECAME AN ART FORM"**

BARRY PURVES, ANIMATION DIRECTOR

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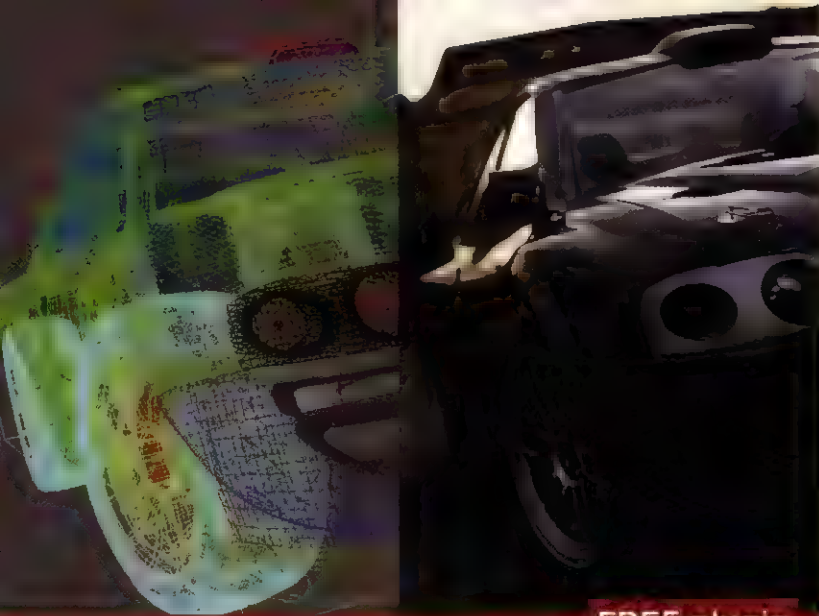
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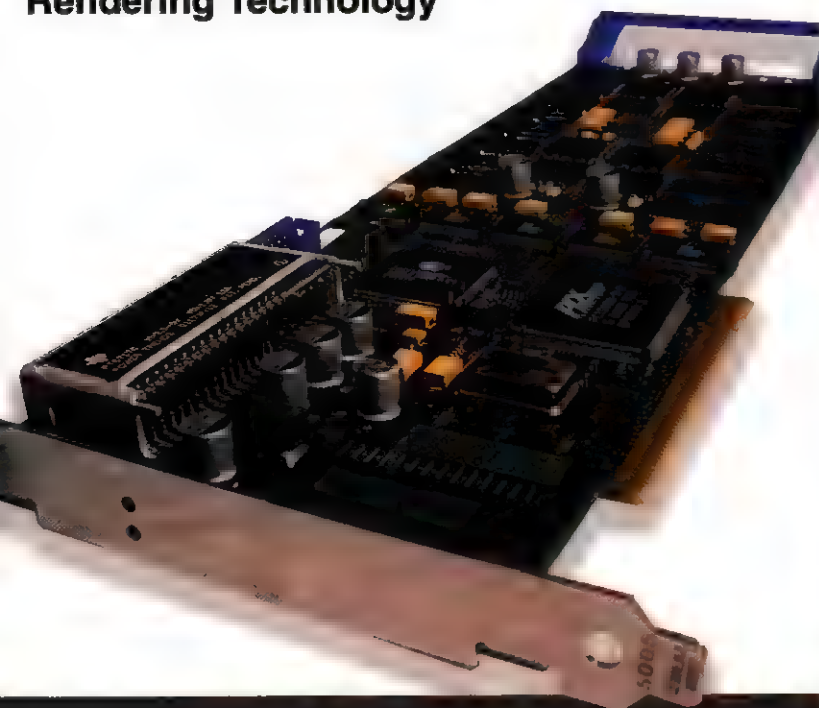


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TUTORIALS

TECHNIQUES / TIPS / TRADE SECRETS

CINEMA 4D

dream machine

From materials nightmare to the stuff that dreams are made of: master the intricate texturing and lighting techniques required to turn the meshes on your CD into the sleek android on the right

BY BENEDICT CAMPBELL

FACTFILE

FOR

Cinema 4D

DIFFICULTY

intermediate

TIME TAKEN

Three hours

ON THE CD

- Cinema 4D R9 demo
- Android base models
- Completed scene file
- Full-size screenshots
- Extended walkthrough

ALSO REQUIRED

Photoshop

Since the first days of 3D, androids have captured the imagination of digital artists. From music videos such as Björk's *All Is Full Of Love* to blockbusters like *I, Robot*, the pairing of sleek, inorganic materials with the organic curves of the human form has produced some of the industry's most iconic images.

But, as those artists discovered, creating a believable android is not as simple as it looks. While steel, glass and chrome may seem simpler surfaces to simulate than human skin, a formidable array of texturing, lighting and compositing techniques must be employed.

Over the course of this tutorial, we'll be exploring some of those techniques as we recreate this month's cover image in *Cinema 4D*. First, we'll make use of some of the advanced shaders which are now built into the software. Originally known as the *Smell's Like Almonds* shaders, this collection introduces a whole range of complex features, including Anisotropy, which we'll be using to create some realistic metallic surfaces. We'll also be covering some basic texturing principles, using Alpha channels to add decals, and using bitmaps to generate embossed logos.

On your CD, you'll find C4D files for some of the components of the android model, which we'll use to illustrate these techniques. We've also provided the entire model, *ASIMOV_MK13.c4d*. In this file, most of the textures have been set up, and a camera has been added. This will form the starting point for the next part of the tutorial: a simple but effective lighting set-up that simulates a typical studio product shot. To make the most of this, we'll be rendering the image using *Cinema*'s multipass rendering and compositing tags to create separate layers and selections in *Photoshop*. You can find the render on the disc, along with the final scene file, *ASIMOV-MK13-FINAL.c4d*. The last section of the tutorial will cover the *Photoshop* work to add the final touches to the image.

Extra scene files, showing refinements to the set-up, are supplied on the CD for you to experiment with, along with an extended version of the tutorial text: refer to this if you get stuck.

Benedict Campbell is a freelance digital artist, known for his signature android imagery [w] www.benedict1.com



ON THE CD

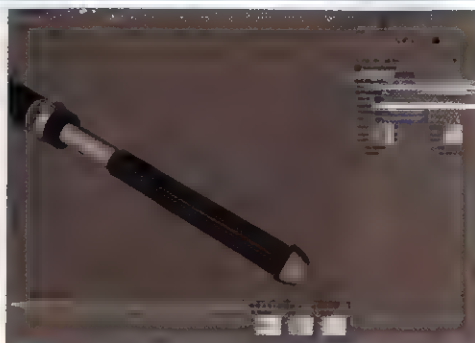
● *Cinema 4D R9*
demo, robot model
and scene files
SEE PAGE 114

ASIMOV P7.175
DAVIDSON.COM

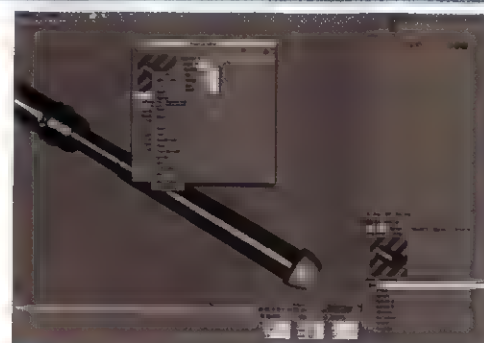
STAGE ONE | Setting up Anisotropic shading



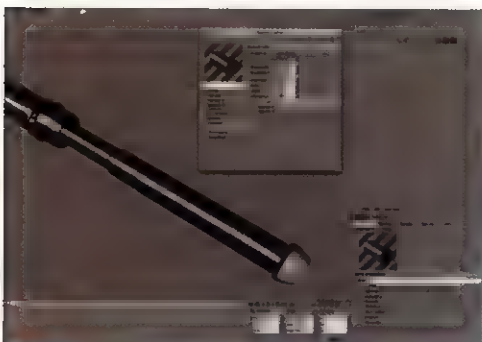
01 Open the HYDO-BAR.c4d file. This is one of the hydraulic struts in the robot's neck and is used several times in the model. Go into Preferences, click on Texture Paths and choose the folder on the CD where the textures are for this tutorial. Click on the HYDO-BAR label in the Object Manager panel, then in the Material Manager, click File > Shader > Danel.



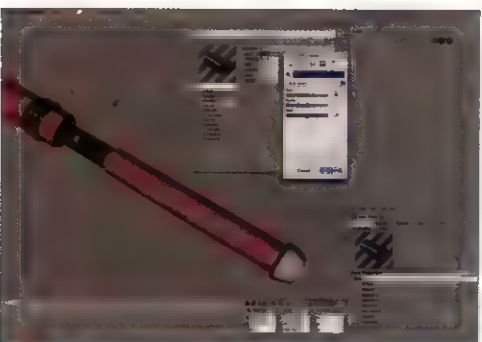
02 Double click the Danel shader icon to bring up the Material Editor. Uncheck Diffuse then activate Specular 2 and change the colour to white. Do the same with the Specular 3. Click on Anisotropy and set Projection to Auto Planar. Rename the texture to 'a'. In the Material Manager, copy and paste twice. Rename these new shaders as 'b' and 'c'. Drag all three icons onto the bar model.



03 Click on the first shader icon in the Object Manager, next to the HYDO-BAR label. This will open the Basic Properties panel. In the Selection path type the letter 'a' (this refers to one of the three polygon selections within the model). Do the same with the other two icons, changing the selections to 'b' and 'c'.



04 Double click on texture 'a' in the Material Manager. Click on Anisotropy and change Amplitude to 100%, Scale to 200%, Length to 10% and Attenuation to 25%. Check the Specular 3 channel, so all three are active. Do a quick test render to check (Render > Render View or [Ctrl] + [R]) - the bar should now look suitably shiny, like it has been machine milled.



05 Back in the Material Editor (still with texture 'a'), click on the Specular 3 channel. Click the colour swatch and change the RGB values to 60R, 73G and 127B - this should be a dark blue-grey. In Specular 1, change the Intensity to 30%. In the Reflection channel, change the Edge Intensity to 30%. Another test render ([Ctrl] + [R]) should show what looks like dark, anodised stainless steel.



06 Double-click on texture icon 'b'. In the Material Editor change Anisotropy to Amplitude 100%, Scale 200%, Length 100% and Attenuation 30%. Double click on texture 'c', check the Diffuse box, and change the colour to 118R, 73G, 48B to make a dark tan. Click on Specular 2 and change the colour to 255R, 248G and 160B to make a lemon yellow. Click on Specular 3 and change the

colour to 196R, 156G and 35B to make a mustard colour. Click on Anisotropy and alter the values to Amplitude 100%, Scale 200%, Length 100% and Attenuation 10%. Make sure all three Specular channels are checked.

STAGE ONE (Continued) | Setting up Anisotropic shading



07 Click on texture 'c', then copy and paste to make a new texture. Rename it to 'end'. Drag this icon onto the END object label in the Object Manager. While the 'end' texture is highlighted, click on the Texture Axis Tool (a checkerboard with X,Y,Z axes) in the tool menu on the left. In the Coordinates Manager (bottom of the screen), change the Rotation B (Bank) value to 90 degrees.

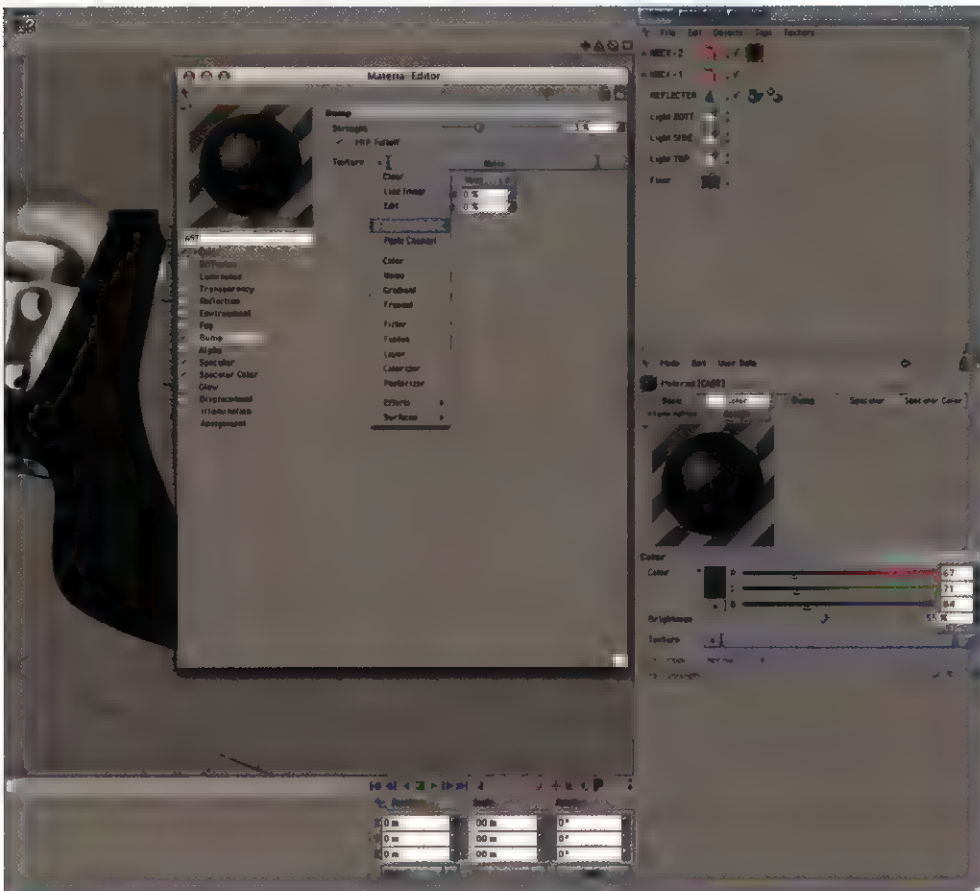


08 Open the Material Editor for texture 'end', and alter Specular 1 values to Intensity 90%, Size 3%, and Glare 100%. Change Specular 2 values to Intensity 10%, Size 10%. Change Specular 3 values to Intensity 15%, Size 40% and Glare 50%. Under Anisotropy, change Projection to Planar, and the values to Roughness Y=200%, Scale 300%, Length 900% and Attenuation to 5%.

Using previews

One of the new things in Cinema 4D is the way the Material Editor now works - if you right-click on the material preview, you can change the size, the shape of the object, and even angle it to match your object in the main window. This can help you understand how changes to the shader will affect the geometry you're working with.

STAGE TWO | Creating materials for the neck piece and eyes



09 Open up the file NECK BITS.c4d. In the Material Manager go to File > New Material to create a default texture. Rename it to 'CAST'. Under Colour, change the values to 67R, 71G, 84B and decrease the Brightness to 55% to make a dark slate grey. Highlight the Bump channel, click the Texture drop-down menu and select Noise. Click the Noise preview to reveal its properties. Under

Noise, select Wavy Turbulence. Click the back arrow to hide the properties, and change the Strength to 13%. In the drop-down, select Copy Channel. Highlight the Specular channel and make the Highlight Width 76%, Height 97% and Falloff 3%. Check the Specular Colour channel and in the Texture drop-down select Paste Channel. Drag the texture on to NECK-2 in the Object Manager.

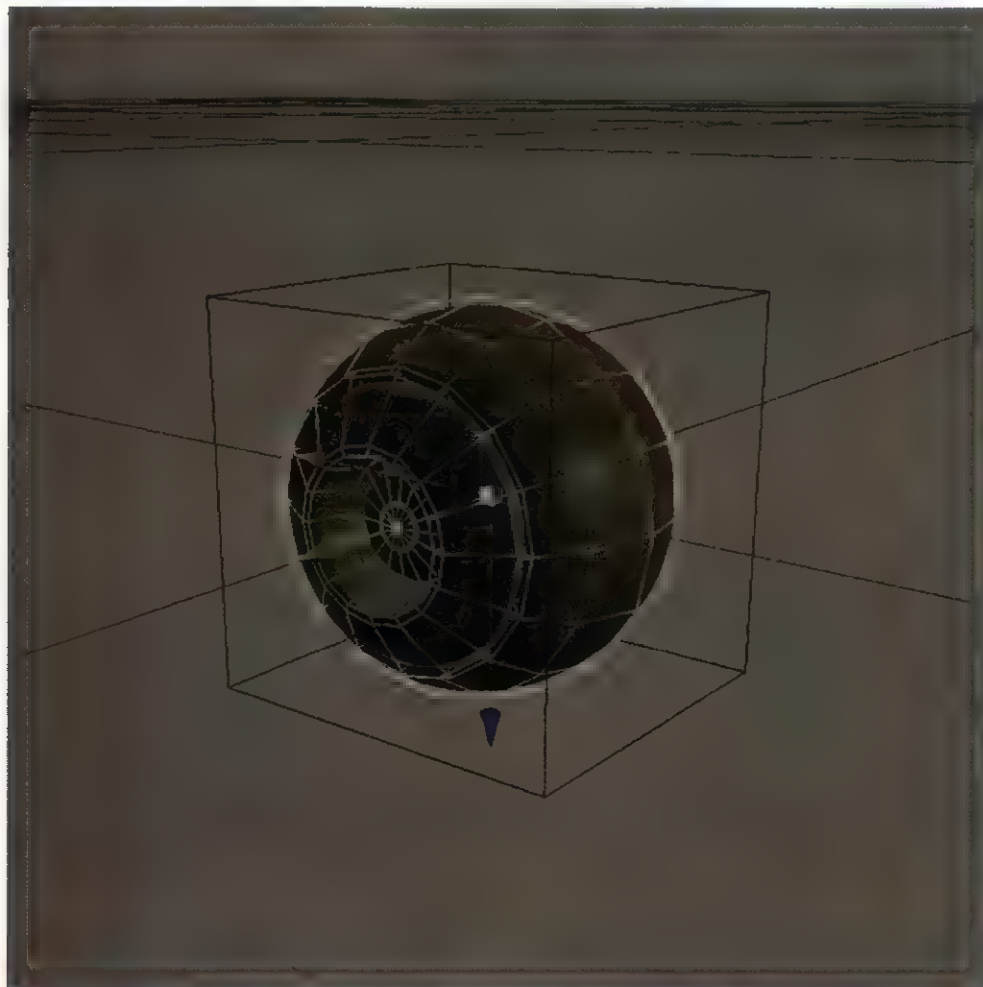


10 Go Material Manager > Shader > Daniel. Uncheck Diffuse and Specular 2. In Specular 3 change the colour to 168R, 168G, 168B. In the Reflection channel, make Intensity 20%, Edge Intensity 90%, Falloff 70%. Check Anisotropy, but leave the default values. Name this texture 'SS' and drag it onto NECK-1. Click on the Texture Axis tool and change the Rotation P (Pitch) to -22 degrees.



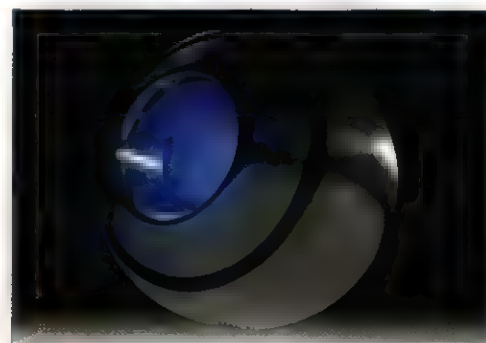
11 Open up the file EYE.c4d. Create a new material, and name it 'BLUE GLOW'. In the Material Editor, change the colour to 15R, 33G, 255B for a deep royal blue. Activate the Luminance channel, and in the Texture drop-down, select Fresnel. Click on the preview to reveal the properties, then change the white node to 11R, 1G, 182B, and the black node to 125R, 138G, 255B for a gradient from deep blue to violet. Activate Glow and make Outer Strength 100%, Radius 3, and uncheck Use Material Colour. You can now change the colour to 0R, 83G, 236B. Drag this on to the eye model and change the Selection name to '11'.

STAGE TWO (Continued) | Creating materials for the neck piece and eyes

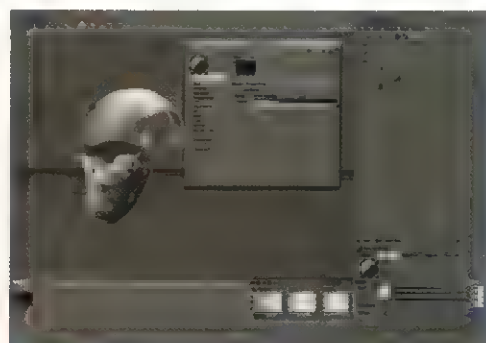


12 Create a new Danel shader, and rename it to 'MEC EYE'. Uncheck the Diffuse channel, and change Specular channels 2 and 3 to white. In the Reflection channel change the Intensity to 40%. Activate Roughness and change the Amplitude to 5%, and Scale to 3% to create slight imperfections in the reflection. Activate

Anisotropy, but leave the default values. Drag this texture on to EYE in the Object Manager, making sure it's on the left-hand side of the BLUE GLOW icon - C4D reads shaders from right to left, so this metal effect needs to be under the blue glow. Go to the Texture Axis tool and set Rotation P to -90 degrees. In the Object Browser, go Texture > Fit to Object.



13 Open up EYE-B.c4d. In this version we've copied the MEC EYE metal texture and applied it to the '12' polygon selection, and played around with adding anisotropic scratches, and added colour to the specular channels. This creates a subtly different material on the iris, to differentiate it from the rest of the eye.



14 Open the HEAD.c4d file. The skin texture is already in this file - double click on the SKIN icon in the Material Manager. Activate Reflection and in the Texture drop-down, select Fresnel. Click on the preview to reveal the properties. Take the middle gradient node and drag it about 25% from the left. Activate the Bump channel, select the Noise texture, and make Global Scale 6% and Contrast -80%. Click the back arrow and then change the Strength to 3%. In the Specular channel, make Width 25% and Height 200%. This creates an 'orange peel' effect, like rippled paint.



15 Click on the SKIN texture in the Object Manager. In the Texture Tag window below, go to Basic Properties and change the Side pull-down to Front.



16 Click on the Mat 1 material and drag it on to the HEAD label in the Object Manager. In the Basic Properties change the Side pull-down to Back. This refers to the direction of the polygon normals. This black surface represents the unpainted plastic, and appears on the reverse side of the face model (spin it round and do another test render to see what we mean).



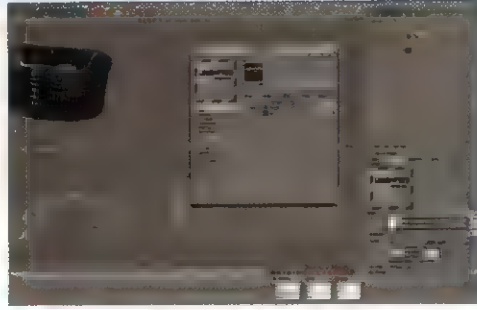
17 Create a new material (Mat 3). Set colour to 218R, 219G, 255B, and Brightness to 50%. Activate the Alpha channel and in the Texture drop-down, go to Load Texture and locate the file CODE.jpg. Drag Mat 3 on to the HEAD label, to the right of the other shaders. With the icon still highlighted, change the Projection to Flat, the Side drop-down to Front and uncheck the Tile option.



STAGE TWO (Continued) | Creating materials for the neck piece and eyes



18 Go Display > Stacked Materials so you can see all the materials at once. Click on the Texture Axis tool and type these values into the Coordinate manager, making sure that it's in Object mode, rather than World: Position X=0, Y=54, Z=-65; Scale X=9, Y=12, Z=12; Rotation P -20 degrees. The barcode is now properly scaled and centred on the robot's forehead. Now, open CHEST PLATE.c4d. Create a new material and name it 'BADGE'.



19 In the Colour channel, select Load Image and locate BADGE-A.jpg. Activate Reflection and select Fresnel in the drop-down menu. Activate the Bump channel, load the BADGE-C.jpg image and set the strength to -51%. Click on the Texture drop-down and select Layer. Go Shader > Noise. Double-click the preview and set Contrast to -99%. Go back to the Layer Shader Properties, set the Layer Adjustment from Normal to Screen, and adjust the Noise layer to 50%.

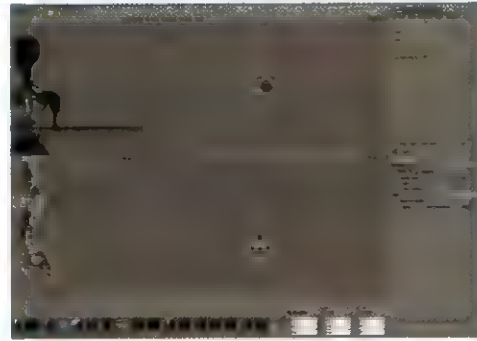


20 Click the Image button and load BADGE-B.jpg. Set this layer to Multiply. Activate the Alpha channel and Load Image BADGE-B.jpg. In the Specular channel, set Width 85%, Height 80%, Falloff -25%, Inner Width 0%. Drag BADGE on to the CHEST PLATE label on the right-hand side. Uncheck Tile and set the Projection to Flat. Click the Texture Axis icon and set these values: Position X=0, Y=55, Z=-170; Scale X=95, Y=45, Z=95; Rotation P=-35 degrees.

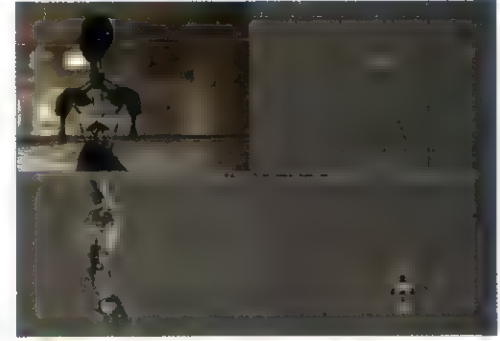
STAGE THREE | Lighting and setting the scene



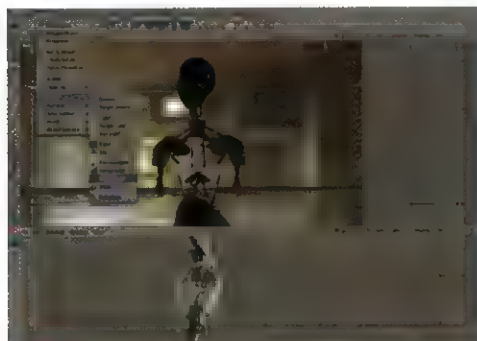
21 Load ASIMOV-MK13.c4d. The model is now textured, but there are no lights or background. Click the Light icon in the top row to create a new light. Rename it 'TOP'. Move it to these coordinates: Position X=-450, Y=1000, Z=-360. In Light Properties > General, change the Shadow from None to Hard. Add another light and name it 'SIDE'. Position X=800, Y=250, Z=280. Set Shadow Type to Soft.



22 Add a third light, 'CAM'. Set Brightness to 30%, Type to Spot (Round) and Shadow to Hard. Click on the Details tab and change Outer Radius to 15 degrees. Go Functions > Transfer. Now grab the Camera label in the Object Properties and drag it into the Transfer To field in the Options panel and click Apply. This links the light's position and rotation to that of the camera, emulating a ring flash.



23 Add a Sphere primitive (the blue cube icon). In Object Properties, make the Radius 3000. In the Material Manager is a texture called ROOM. Drag this onto the Sphere label. Change Position to Y=320, and Rotation H to 234 degrees. Right-click on the Sphere label and select Cinema Tags > Compositing. In the Tag Properties window, uncheck Cast Shadows, Receive Shadows and Seen by camera.



24 Go to Objects > Scene > Background. Drag the texture BACKGROUND onto the Background label. By Sphere, there are two grey dots - click the top one until it turns red. (This makes it invisible in the view window.) Now click on the ASIMOV-MK13 label in the Object Manager. Right-click and select Cinema Tags > Compositing. Under Object Buffer, enable Buffer 1.

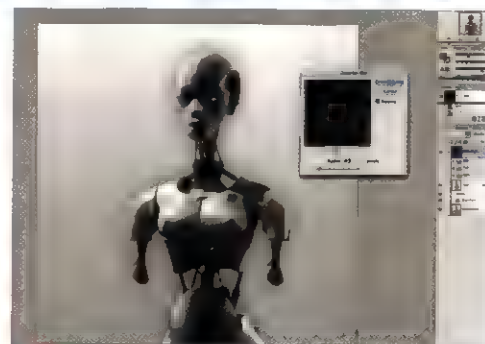


25 Go to Render > Render Settings > Multipass and make sure Enable Multipass Rendering is checked. In the General setting, select Antialiasing > Best and Filter > Blend. Click on the Channels drop-down and select RGBA Image, Reflection and Object Buffer > Group ID 1. Then, under Separate Lights, choose All. Click Path... and choose a name and location for the saved images. Hit Render.

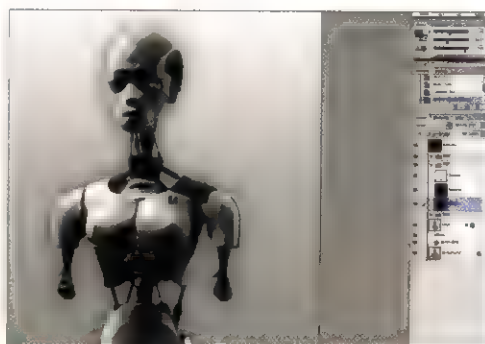
Working with materials

In Cinema 4D, the panel along the bottom left is the Material Manager where textures are stored; double-click an icon to open the Material Editor. The Object Manager top right provides access to scene objects and their tags. The Basic Properties panel beneath lets you edit objects, lights, cameras, tags, etc. Changes to an item's position, scale and rotation can also be entered into the coordinate boxes at the bottom right.

STAGE FOUR | Post-processing the render in Photoshop



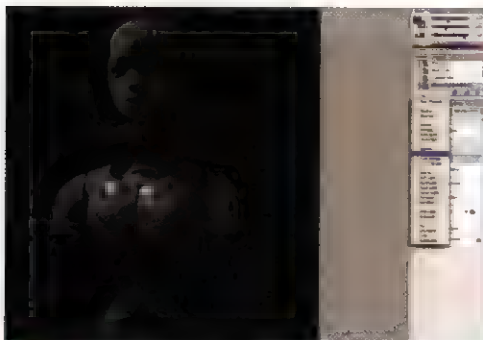
27 Click on the Reflection layer. Go Filter > Blur > Gaussian Blur with a Pixel Radius of 4.5. This softens the reflections and adds a slight bloom. Fine adjustments like this may seem subtle, but they will greatly increase the impact of your finished image.



28 Click on the SIDE layer to activate this layer group. This includes separate layers for Shadow, Specular and Diffuse image values. Open it up and deselect the Diffuse layer to bring out some of the highlights. Click on the TOP layer and then click on the Diffuse layer. Turn the opacity down to 60%.

26 Open up the .PSD file you just saved from Cinema 4D. In Layers, deactivate all the layers except the Background. With the Background layer selected, go into Channels, grab the Object Buffer channel and drag it onto the Load Channel As Selection icon. With this selection active, copy and paste to create a new layer containing just the image with no background (this should line up precisely

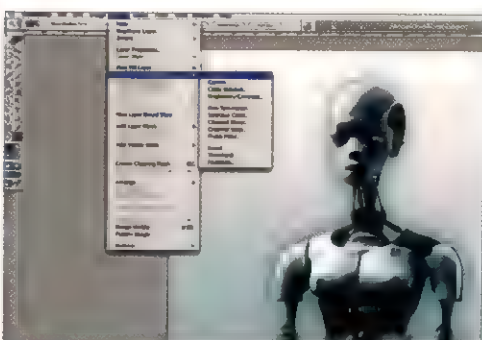
with the layer beneath – if not, move it accordingly). Double-click Layer 1 to activate Layer Styles. Check the Outer Glow, then click on the name to open the properties. Set the Blending Mode to Normal, Opacity to 15%, Noise to 2% and change the gradient colour to black. In Elements, change the size to 60 pixels. This simulates the shadow you get from a ring flash in a controllable, editable way.



29 Click on the CAM layer. The scene goes black, because its Blending Mode is set to Normal - change this to Screen to reveal the Background layer. Again, you can adjust the overall opacity of this group to dial in the amount of light you want from the ring flash. Try playing around with the individual layers to see how much control this multipass approach can provide.



30 Click on the Reflection layer at the top of the stack. Go to Layer > New Adjustment Layer > Gradient Map. Click on the gradient map itself to open the Editor window. The two Colour Stops should be black and white. Make a new Colour Stop at location 40% with colour 60R, 72G, 123B and one at 80% with colour 126R, 184G, 203B. Change the Blending Mode from Normal to Soft Light.



31 Click on the CAM layer to reveal the layers within. Deselect Diffuse, and highlight the Specular layer. Go Layer > New Adjustment layers > Levels, and check the Use Previous Layer To Create Clipping Paths. With the Levels histogram open, slide the middle (grey) input level cursor along to reveal or hide detail in the shadows. Again, this provides great control over your finished image. ●



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TRADE SECRETS

Texturing for games

Create smaller, more space-efficient textures with these simple real-world tricks for videogame artists **BY ANDY BASS**



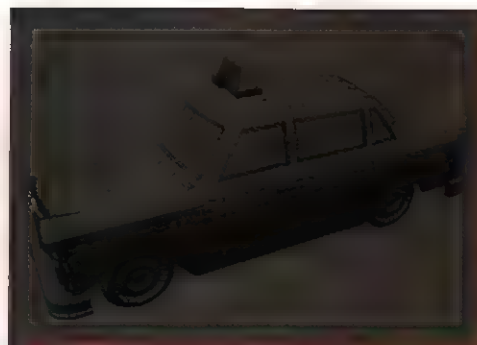
Whether you're working on a PlayStation 2 title or a Hollywood film, the process of texturing a 3D model is more or less the same, right? Wrong. The limited texture budgets of existing game engines force artists to minimise the number and size of textures required for a title. To do this, a number of specialist techniques have been developed.

This article is intended to provide an overview of the principles of texturing an object for a videogame, focusing primarily on UV coordinates and how to place them sensibly onto a texture page. As with most things CGI, there is no definitive guide to texture mapping mainly because each game engine will have its own set of rules governing what it is and isn't capable of. Therefore, what may work well in one engine may be unworkable in another.

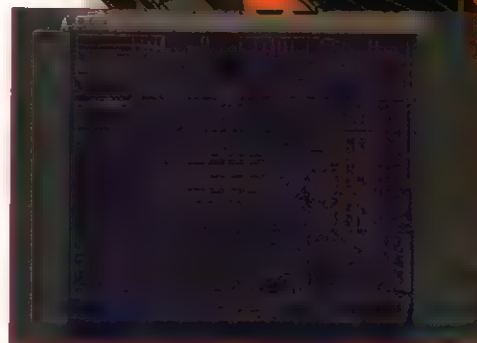
With the industry in a constant state of flux, work procedures also change quickly. A couple of years ago, a diffuse texture map applied to a mesh would be all that was needed for a successful texture. Today, the same mesh could well have a separate specular and alpha texture along with a hi-res version of the original mesh to generate a Normal map. However, a mesh is still going to need to have a diffuse texture applied, and it's still going to need a set of UV coordinates for any of this to work properly.

Let's take a look at a real-world example. The taxi model on the right has been created as a prop for a game, and we'll say that due to limitations of space, we only have one texture available to us. Unlike a model created for a film, we can't rely on materials created within a 3D package; instead, we need to lay out the entire taxi on a texture page so that we can paint in the detail. We'll be using some mirroring and tiling techniques to help keep the texture as simple as possible, as well as looking at UV layout and the tricks we can use to make the whole procedure as efficient as possible. You can find an accompanying XSI file on your CD to explore in more detail.

Andy has worked at UK games developer Lionhead Studios for six years on titles such as *Fable* and *Black & White* [w] www.lionhead.co.uk



01 The taxi mesh. We've only built half the car, so once the texture has been created and applied to the mesh we can copy the mesh, then mirror it to give us the completed car. If we were to generate a normal mapped version of the taxi, each polygon would need its own unique UV coordinates; no tiling or mirroring, I'm afraid.



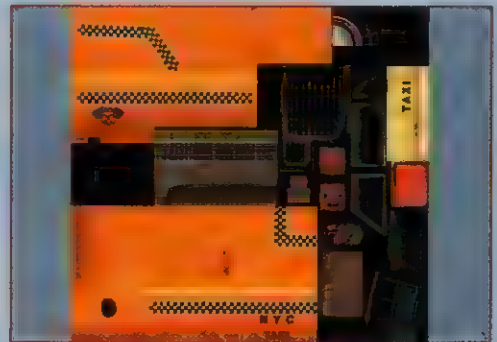
02 These are the taxi's UV coordinates, laid out in the texture editor. It's worth spending as much time as you can (deadlines permitting) on laying out the UVs neatly within the texture editor because it will form the layout for the texture you'll need to create. Try and separate the UVs into sensible areas: lights, wheels, bumpers, etc.



03 The wheel is a standard texturing 'cheat'. We've only created a texture for a quarter of a wheel: one sixteenth of the texture space that would otherwise be required for all four tyres. The downside is that if we had to show damage to the wheel in-game, the damage texture would need to be very subtle, or it would produce visible tiling.



04 When the first half of the taxi has been textured, the mesh can be copied and mirrored to produce the other side, saving space. However, any text or symbols on the texture will now be flipped on this new half. We need to go back into the texture editor, select all the polys on the new half that have mirrored text, and mirror them in the texture editor to put everything right again.



05 The texture used for the taxi, with a wireframe of the taxi's UV coordinates overlaid. The black areas are unused, so in effect are wasted space. Also, all five windows have separate UV coordinates, whereas in fact they could have been combined, thus making more space available for the body of the taxi.



06 Here's a view of the taxi showing the geometry we've actually textured: it's less than you'd expect. Half the car body, split in two sections to keep the texture resolution relatively high, a quarter of a wheel, a door handle, half a front bumper and the taxi sign. As a general rule in games, modelling is about a third of the workload: laying out the UVs and creating the textures takes twice as long. ●

● Particles aren't simply for smoke or flames, as this still of blood cells speeding through an artery illustrates. This article sets out some similarly creative ways to make use of particle systems. Image © Kevin Quattro

Pro tips for particles

Our experts
this issue...

ALLAN MCKAY



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From smoke to shooting stars, follow our collection of professional tricks for 3ds max, Maya, LightWave and Cinema 4D to bring your particle effects to life

Most visual effects would be impossible without particles. Animators rely on them for complex scenes that would be ludicrously time-consuming to keyframe. You can even use them to create fur, feathers or grass. Yet particles remain one of the most under-exploited tools in 3D software.

The problem is that the enormous versatility of particle systems is also their undoing. Faced with a bewildering array of controls, drop-downs and parameters, many artists simply go for the default settings. The result is either one of the tell-tale signs of CG animation – sparks that seem to move in slow motion, synthetic-looking flames, and smoke that fails to respond to the prevailing wind – or frames that take days to

render. Yet all that is often needed to transform such problem systems into flexible, fast-rendering effects is a few simple parameter tweaks.

Over the course of this article, our three visual effects professionals will be revealing some of the tricks they use to vary the homogeneity of their software's default particle settings, and translate complex real-world phenomena into manageable 3D simulations. They will also be suggesting some more creative uses of particle systems, beyond the standard repertoire of smoke trails, explosions and starbursts.

Although we'll be focusing on four applications – *LightWave*, *3ds max*, *Maya* and *Cinema 4D* – most of the techniques set out here can also be adapted for use in other software packages.

All those plus/minus fields are there for a reason – they add another level of randomness to your simulation – and, when they're used with animated values via envelopes, you get an even better looking simulation. Adding a value to the plus/minus for weight, for example (see image at foot of page), will allow the particles to move at slightly different speeds as they're emitted, which can look instantly 'CG'. Plus/minus values between 0.1 or 0.3 work nicely. **(KO)**

There's an area to drag and drop objects in the Attributes manager. Drag both of the models into this box. If you have trouble here, try clicking the Lock icon to prevent the window from changing. You can now finish off the process by animating the phase from 0% to 100%. You can smooth out the Particle morph by selecting both models within the small list and increasing the Count option. **[MO]**

PLUS/MINUS
FIELDS ARE
THERE FOR
A REASON:
THEY ADD
RANDOMNESS

AVOID SOLID,
NON-ANIMATED
PARAMETER
VALUES: USE
ENVELOPES

305 max

in a scene where rain is pouring from the sky, 2.5 million raindrops will have to be calculated to collide with the ground to create rain splatters, and this can really bog down your system. It's sometimes a lot smarter – especially in situations where you can't really see when the collisions take place – to have a separate system for the rain splatters, and create them randomly all over the surface where the raindrops will hit.

A useful way of approaching this is to have it create particles over the surface with a life of 1 and spawn several particles up in the air, maybe with a Speed by Surface to help shoot them up in lots of varied angles. This is just a single example, but it hopefully shows you ways where it can be more practical (and beneficial to your projects) to approach things in a less accurate way **[AM]**

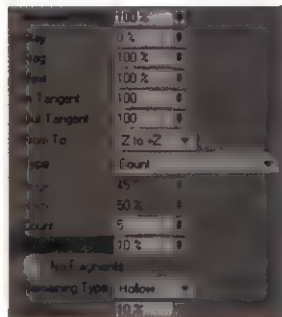
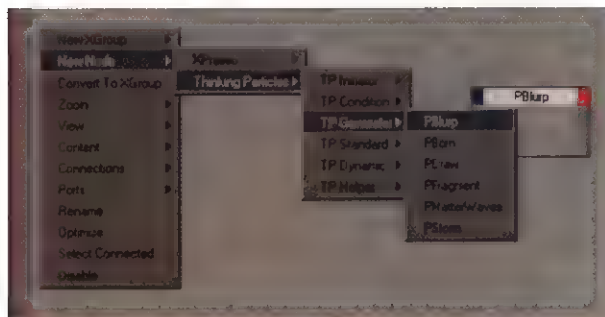
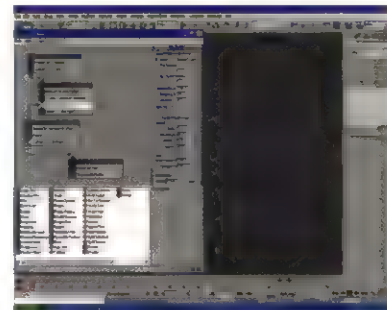
lightWave

You should always bear in mind that the more parameters you add envelopes to, the better your particles will look when they're completed. Just using a solid, non-animated value will greatly reduce the organic flow of the particles you create. This applies to any particles project you end up doing. Try experimenting with using envelopes in all the values to add more life to them. It takes a bit more time but the effect it'll have on your particles will really be worth it in the end. **[KOL]**



● **INSET** Bright, burning particles, such as welding sparks, leave trails when viewed through a camera or with the naked eye (Tip overleaf)

● **INSET** Bright burning particles, such as welding sparks, leave trails when viewed through a camera or with the naked eye. (Tip overleaf)



● **RIGHT** The +/- fields in *LightWave* add realistic randomness to your particle systems (see 'Plus and Minus')



Using fluid shaders on particles

1 April

Maya's fluids brought a new level of quality to volumetric shaders in *Maya*. Most people assume their Raymarcher/Volumetric shader to be usable only with fluids. But what they overlook is the fact that once you've built even a simple Volumetric Fluid Puff, you can set its initial state and then assign the shader to your ParticleShape (s/w Cloud). For every particle, it'll reference your fluid container. From there, you can add extra variables or expressions to make each value unique to each particle for even more control **[AM]**

Gravity speeds things up

11 June 40

A common tell-tale sign of CG animation is when everything seems to be in slow motion. Sometimes the bounces and deflection of particles happen so fast that the viewer shouldn't be able to accurately trace the exact path each particle has taken. A quick way to accelerate your particle animation is to increase the gravity of the entire simulation. Start off by doubling the gravity you already have. To compensate for the gravity changes, you'll need to increase the particles' initial velocity. Take a look at Speed.c4d on this issue's CD to see how this works **[MO]**

Visualise the effect in Layout

11 July 10

You should always have the particles playing in Layout to help you to better visualise the changes you're making in real time. So, if you don't do this already, click the play button on the timeline to see how your particles are behaving, and let them run while tweaking **[KQ]**

MAYA'S FLUID SHADERS CAN ALSO BE USED FOR PARTICLES

USE VECTOR MOTION BLUR FOR BRIGHT PARTICLES

ALWAYS LET PARTICLES RUN WHILE TWEAKING

Use particles for procedural animation

2 Dec 10

Keeping with the theme of thinking outside of the box when it comes to complex particle systems, rather than having to hand animate a lot, you can always use particles for completely non-particle-related events.

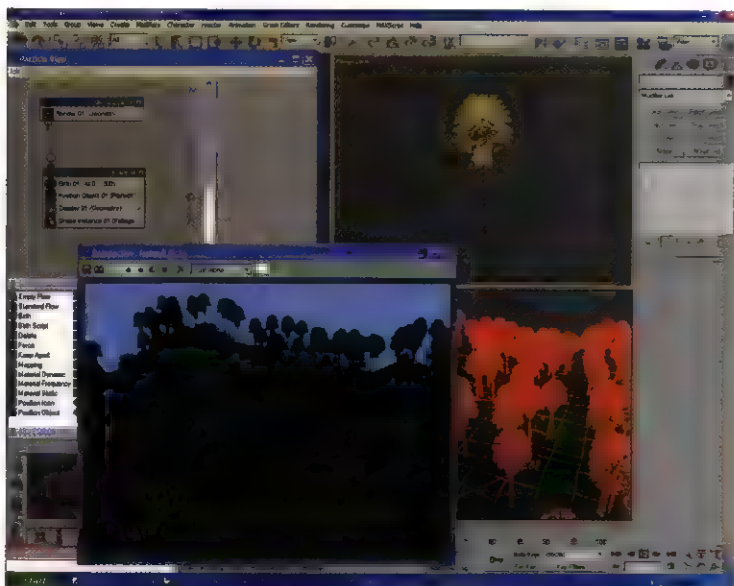
Whether it's having your character's eyes follow a fly around the screen, or making him blink if a ball shoots too close to his face (or any other referenced animation), you can have it all offset and triggered to start as a Separate Instance shape when a certain particle event happens. Another example might be spreading trees all over a surface, and having any that come in to contact with a Deflector, shake or bend as it moves through the trees, just like a big dinosaur stomping through the jungle **[AM]**

Bright particles need Motion Blur

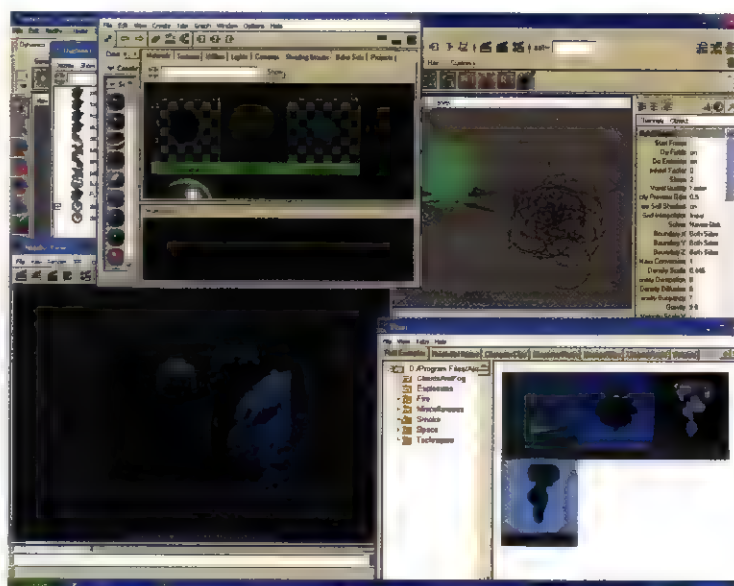
11 June 40

If you want your particles to be very bright objects, such as sparks or meteor trails, one of the most important things to remember is Motion Blur. Digital camera CCDs and the human eye are both limited when it comes to different extremes of brightness: no matter whether the effect arises through persistence of vision or because of a technical limitation, bright objects will always leave noticeable motion trails as they streak through the air.

To simulate this, you'll need to use Vector Motion Blur, as the other two types don't support unclamped brightness. If the brightness values are clamped, instead of getting a brilliant white trail, the trail will become a dull grey. If Vector Motion Blur isn't an option, then consider rendering a separate pass or Alpha for the particle system and then compositing it back into the scene using the Add, Linear Dodge or Screen mix modes **[MO]**



● ABOVE Not only can you use a particle system to procedurally scatter instance geometry over a surface, but you can also make the system trigger different animation cycles based on whatever events you like (see 'Use particles for procedural animation')



● ABOVE Rather than sticking with *Maya*'s generic volumetrics, you can instance fluid containers for your particles and add expressions to differentiate between each particle. This gives you the ability to create really cool fire, cloud or smoke effects (see 'Using fluid shaders on particles')

Add random noise

LightWave

You should always add some randomness to a particle simulation. Most people tend to set their birth rate at a default number, such as 100 or 250. Add an envelope to this value. For most systems, I like to vary the emission between 100 particles per second to 200 over a repeating range of five frames. This adds a more organic flow to the particles. The general rule is to adjust the value to around 50-65% of the final value you chose. In the image at the foot of this page, the final value is 200, so the lowest value in the envelope is 100. Again, the more keyframes and value changes you make, the more organic and lifelike your particles will be. You can also do this for other parameters like explosion and vibration. **[KQ]**

Conserving your particles' bodies

Maya

Conserving is a subtle feature that is often overlooked, even by some professional *Maya* users. In the Attribute editor of your particleShape, you'll find a small checkbox called 'Conserve'.

By adjusting the value you'll be able to constrain the particles' tendency to spread apart. They'll retain their motion and velocity (unlike drag) but will keep together, forming wisps and swirls. This is great for smoke, water spray and plasma effects. Bear in mind that the value is very sensitive; a good starting value is usually 0.98. **[AM]**

Sprite rendering for speed

Cinema 4D

Volumetric smoke systems, such as PyroCluster, can be extremely slow to render. Where the camera doesn't

VARYING THE EMISSION OF A SYSTEM IN A REPEATING CYCLE ADDS REALISM

USE WIND EFFECTORS FOR PRECISE CONTROL OF PARTICLE SYSTEMS

enter or pan around the particle system, Sprite rendering can be used instead; this still allows for close-ups.

This is illustrated in the Sprites.c4d file on the CD. By using a simple polygon with the emitter, lots of flat planes are given out into the scene. A single material is used, where a black-and-white image of a cloud is placed into the Alpha channel. In the Luminance channel, a gradient has been used to simulate some internal illumination. Don't forget to increase the ray depth in the render settings to avoid nasty black areas. **[MO]**

Fur, grass and feathers

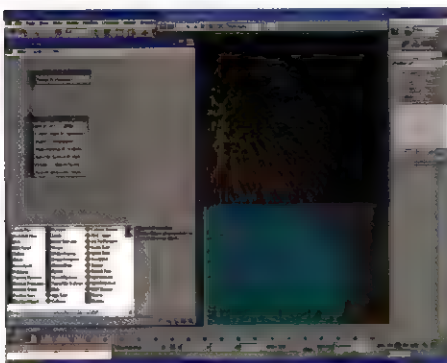
3ds max

A great way to create effects such as fur, grass or feathers that is becoming common knowledge among Particle Flow artists is to instance your fur or grass geometry over a surface, and put a Speed by Surface node with a value of 0 in your flow (as well as a rotation node set to the speed of your particle). This will effectively orientate your particles' geometry to point out in the correct angle of the emitter object. This way, you'll get a really convincing fur effect sitting over the surface of your object. **[AM]**

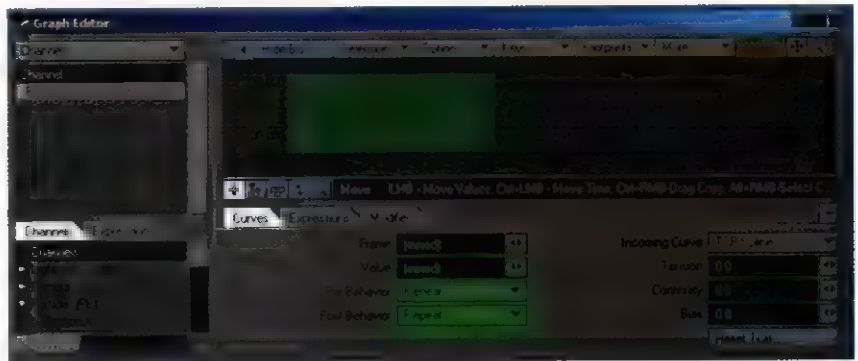
Use a Wind emitter for fine control

LightWave

For the control freaks among us, there are two major ways to make particles move. The first way is to go to the Particle Vector options and force them to move (this is usually the best way to do it). The second way is to add a Wind emitter. This will let you have a lot more precise control over your particles' movements. You should try adding multiple Wind effectors as this will result in even more control over the particles that you create. **[KQ]**

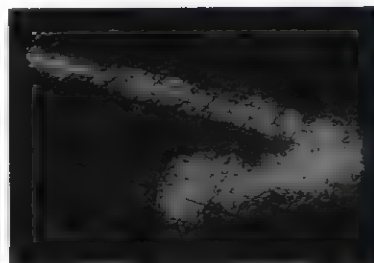
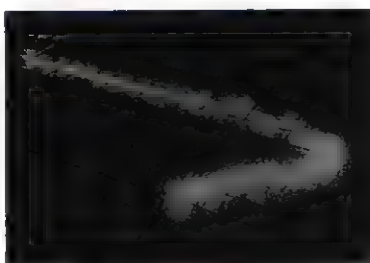


● LEFT Particles aren't just for flames: they also provide a neat way of creating fur or hair (see 'Fur, grass and feathers')

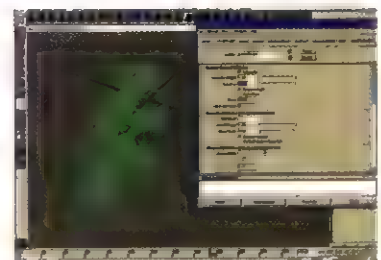


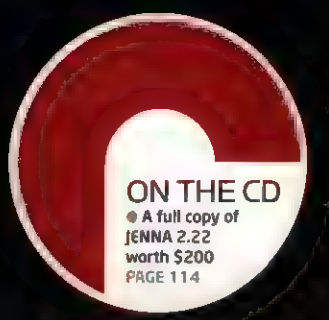
● RIGHT The envelope and key frames for the Birth Rate of a realistically varying particle system (see 'Add random noise')

● RIGHT, FAR RIGHT Adding random noise and dynamically variable parameters helps to break up the 'flatness' of a particle system. These paired images show a smoke trail before and after applying these kinds of tweaks (see 'Add random noise')



● RIGHT Conserving particles in *Maya* constrains their tendency to break apart, generating tighter wisps and swirls (see 'Conserving your particles...')





• JENNA 2.22, the suite of Cinema 4D 9 plug-ins free on the CD, makes light work of complex graphics like these broadcast titles

CINEMA 4D

Your name in lights

Procedural modelling makes it a simple task to produce complex, broadcast-quality logos like the one above. Use the free Cinema 4D plug-ins on our CD to recreate it **BY DAVID FARMER**

FACTFILE

FOR

Cinema 4D R9 and JENNA

DIFFICULTY

Bas

TIME TAKEN

40 min

ON THE CD

- JENNA 2.22 1.
- Cinema 4D R9 demo
- Full-sized screenshots
- Final scene file
- Export tutorial (PDF format)

ALSO REQUIRED

Nothing



There are many different ways for 3D artists to create content for a commercial project. At coreaudiovisual, we use what we call the 'bucket of art' principle. The speed at which clients expect us to complete jobs requires us to quickly find a solution with a distinct visual style, so rather than create everything from scratch each time, we adopt a procedural approach.

To begin with, we fill up a folder with as much stuff as possible: photos, illustrations, animations, sounds, MIDI files, and anything else we can get into a digital form. We have found that the 'recipes' (procedural systems for creating logos, videos or idents) that we use can accept inputs of almost any kind of data.

From the very first moment we receive a project, we begin dropping inputs into recipes we have created previously. Once we have a couple of promising results, we begin refining the execution to produce the content needed for a client presentation. The advantage of this system is that we can easily reuse recipes in future, or alter them for better effect. This task is often simplified by the use of JENNA, a powerful suite of plug-ins for Cinema 4D

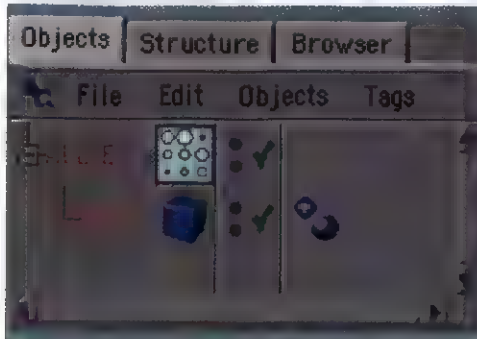
JENNA includes such powerful procedural tools as *ITERATOR*, which generates repetitions of a source object based on iterative transformations, *TWEENER*, which creates a multi-object blend between two source hierarchies, and *ALLIE*, which we will be focusing on in this tutorial.

ALLIE uses the power of the SLA shaders and other Cinema 4D textures to control a volumetric array of objects. In the walkthrough on the opposite page, we will be using *ALLIE* to create a set of titles suitable for broadcast or graphics work – and, since the work is being carried out in JENNA, we thought we'd create titles for JENNA 2 itself. The results may look complex, but since all the geometry is procedurally driven, the effect is actually very simple to produce.

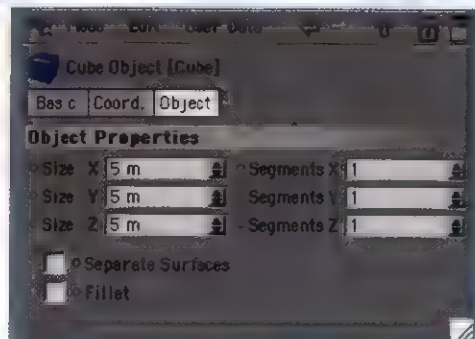
You can find a full copy of JENNA 2.22 on the CD, along with a demo of Cinema 4D R9. The CD also includes the software manual in PDF format, plus tutorials to help you master JENNA's other tools.

David Farmer created JENNA and the Smells like Almonds shaders for Cinema 4D. He now works for coreaudiovisual [w] www.coreaudiovisual.com

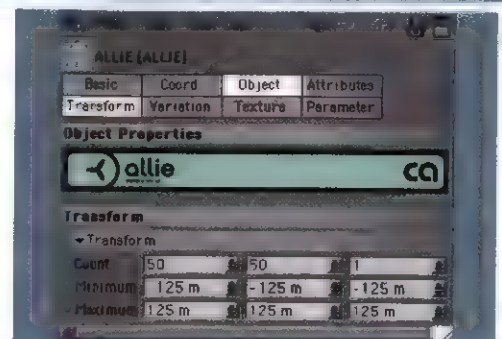
STAGE ONE | Creating the base grid of instances



01 The foundation of our title sequence is going to consist of a base grid of instances. To produce it, create an ALLIE object by selecting Plugins > caTOOLS > caJENNA > ALLIE. Create a cube primitive by selecting menu Objects > Primitive > Cube. In the Object Manager, move the Cube into the ALLIE object.

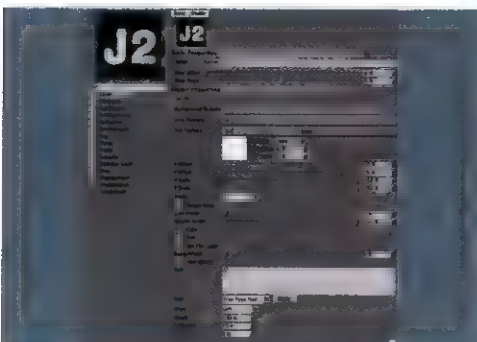


02 For our project, we want many small objects that resize and move to create the image defined in the material evaluation. Select the Cube in the Object Manager. In the Attribute Manager, set the Cube's Size to 5m for all dimensions.



03 In the Object Manager, select the ALLIE object. In the Attribute Manager, set the Count to 50, 50, 1, then Minimum.x to 0, and Maximum.x to 0. This will create a wall of small boxes on the XY axis. You can see how this should look in the screenshot on the accompanying CD labelled 'Finished_grid'. Full-sized versions of the other screenshots for this tutorial can also be found on the disc.

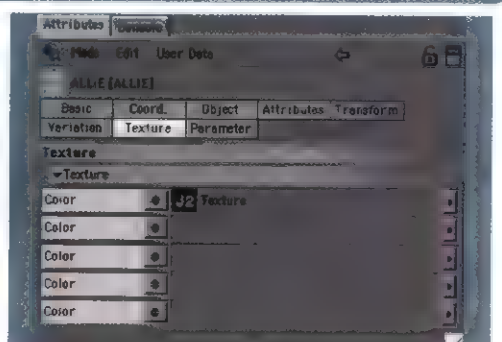
STAGE TWO | Setting up driver materials and texturing the titles



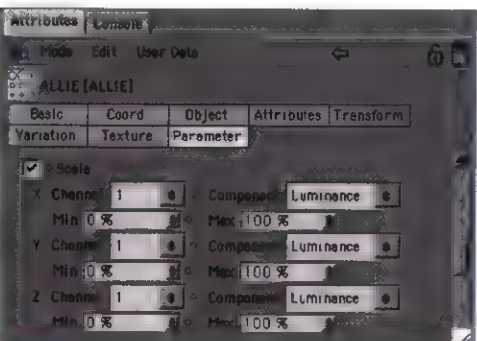
04 In the Material Manager, select File > New Material to create a new channel material. Double click it to edit it. In the Color channel, add a menu Effects/ Spline shader. Set X Offset to 10%, Y Offset to 75%, Line Width to 0, Smooth Width to 100%, Fill to On, Use Fill Color to On (this will enable Fill Texture: set it to a white Color shader), Text to 'J2' and H Spacing to 15.



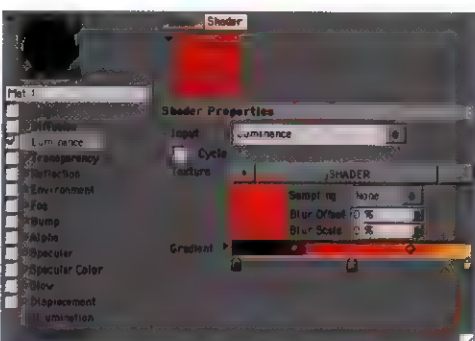
05 Create an uberNULL object by selecting Plugins > caTOOLS > caJENNA > uberNULL. In the Object Manager, drag the uberNULL object into the ALLIE object so it's the first child. Disable the uberNULL object by clicking its green checkmark. In Material Manager, drag the channel material onto the uberNULL object in the Object Manager. This creates a TextureTag used in the ALLIE object.



06 Next, we need to link the materials to the ALLIE channels and map their usage. Click on the ALLIE object in the Object Manager to allow its attributes to be edited in the Attribute Manager. Scroll down to the Texture group. In the Object Manager, drag the TextureTag from the uberNULL to the first ALLIE texture slot in the Texture group.



07 Scroll down the Parameter group, set Density to On, and Channel (beneath Density) to 1. Set Tolerance to 1%. Scroll further down to the Scale group and set it to On. Set all of the channels to 1, each Min to 0%, and each Max to 100%. Since Tolerance is below 100%, you will see the texture affecting the scale of the instances. (See the 'Finished_materials' screenshot on the CD.)



08 Create a new channel material in the Material Manager by selecting File > New Material. Double click the material to edit it. In the Color channel, create a Colorizer shader. Select a JShader for the Colorizer Texture. Edit the JShader and set the Channel to Texture 1.



09 Finally, apply the new material to the ALLIE object in the Object Manager, and render out your image. And there you have it: a finished title. For added effect, you can turn on the Glow channel in the new material or use the JShader in a FUSION. To customise the results, play around with the settings - remember, there's no substitute for experimentation! ●

● The scene's lighting rig was created using a hemispherical array of low-intensity Direct lights, tinted to match the backplate's sky, with shadows to simulate the diffused lighting

3DS MAX

Assisted twister

Learn how to create a magnificent tornado system using 3ds max 7's built-in Particle Flow tools – and there's not a spinning cow in sight

BY PETE DRAPER

FACTFILE

FOR
3ds max 7

DIFFICULTY
Intermediate

TIME TAKEN
Two hours

ON THE CD

- Start and finish 3ds max 7 scenes
- Background plate
- Finishing animation
- Final size screen shots

ALSO REQUIRED

Basic familiarity with 3ds max 7



This tutorial will show you how to create a tornado system using 3ds max's powerful Particle Flow system – without resorting to plug-ins to create the overall effect. Even though

3ds max 7 possesses one of the best particle systems of all the modern high-end 3D packages, it still doesn't have a raymarching volumetric system to facilitate cloud and smoke creation – which, at first glance, would seem likely to make life difficult when creating an effect of this type.

However, by scrutinising source material available by visiting established sites such as NOAA's excellent photo library (www.photolib.noaa.gov) we can tailor a particle system to create the intricate detail required to pull off such an effect, and design materials to simulate the fine debris and smoke. As with most natural phenomena, it's only by looking at reference material that you'll understand how a tornado works.

Basically, a tornado is caused by up currents and down draughts on underlying wispy 'scud' in a storm cloud which, given the right conditions, forms a funnel that reaches towards the ground.

Should this occur, the contact surface is churned up, creating intricate patterns reflecting the turbulence within the tornado. The resulting debris is thrown around in the cloud, often being ejected from the vortex, resulting in debris impacts on the ground or neighbouring buildings.

STORMY WEATHER

In 3D, a tornado is created using two main shades of colour and texture – the cloud colour, which reaches down from the sky, and the debris colour, which comes up from the ground, mixing with the cloud colour and dirtying it up. This makes the funnel denser around the base relative to the translucent area at the top of the funnel.

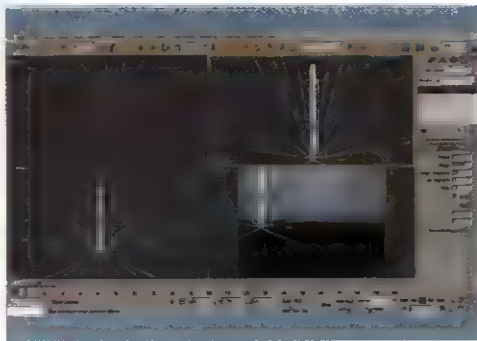
Armed with this information, and equipped with the photos and movies available on the web, we can start designing and adding our tornado to the ready-made scene file included on this issue's CD.

Pete Draper is the VFX Director at Lightworx, Bristol. He'd love to go chasing tornadoes, just as long as they don't chase back! [w] www.xenomorphix.co.uk

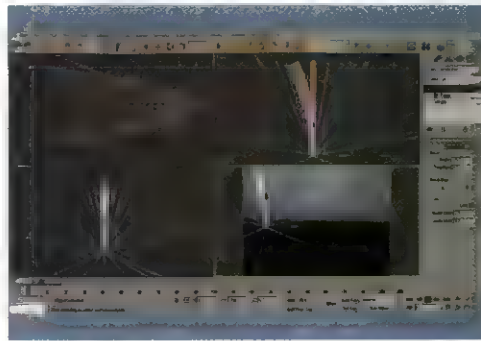
STAGE ONE | Creating and animating the tornado funnel



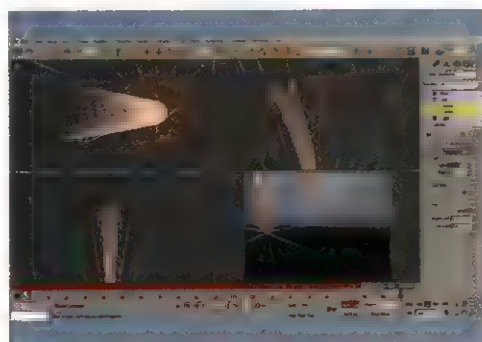
01 Open the *tornado_start.max* file, included on this issue's CD, in *3ds max 7*. Here we have a scene with a lighting rig, a positioned camera to match the backplate (which is also loaded into the Camera Viewport), and a positioned ground plane which has a Shadow/Matte material assigned so that shadows cast by the debris are rendered onto the grass on the backplate image.



02 Our first step is to create and animate our tornado funnel. In the Top Viewport, create a Cylinder primitive with a Radius of 12 and Height of 600, with 20 Height Segments and 32 Sides. Use the Align tool (or reposition manually to X,Y,Z 0,1700,0) to reposition the cylinder to any of the Direct light's Targets. Label the cylinder 'Tornado Render'.



03 Copy the Tornado Render cylinder and rename the copy to 'Tornado Distribution' - this will distribute the wispy particles at the top of the funnel using a map we'll create later. Add a Taper modifier to the Tornado Distribution object's Modifier stack, and set the Amount to 2 and Curve to -1. Add a Bend modifier to the stack, and set the Angle to -25 to finish shaping the funnel.



04 Copy both modifiers, and Paste Instanced them into the Tornado Render object's stack. Return to the Tornado Distribution object, and add a Twist modifier between the Bend and Taper modifiers. Relocate the Centre Gizmo to the top of the Twist Gizmo. Set the Angle to -1440, Bias to 42, enable Auto Key, go to frame 200 and set the Angle to 1440. Turn off Auto Key, and go back to frame 0.

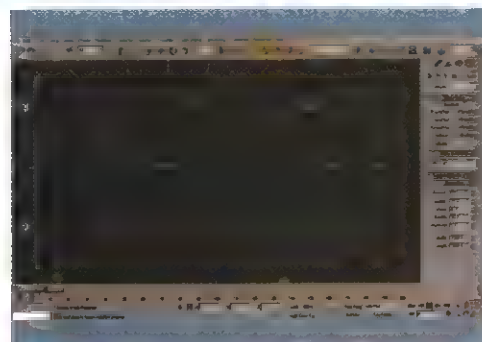


05 Twisting geometry gives the particles something to adhere to, with the relocated Centre Gizmo and Bias forcing more twist. Select the Tornado Render object, go to Frame 200 and enable Auto Key. Reposition the object so it's 700 units along the X-axis - to the right of its starting point. Turn off Auto Key, go to frame 0 and link the Tornado Distribution object to the Tornado Render object.

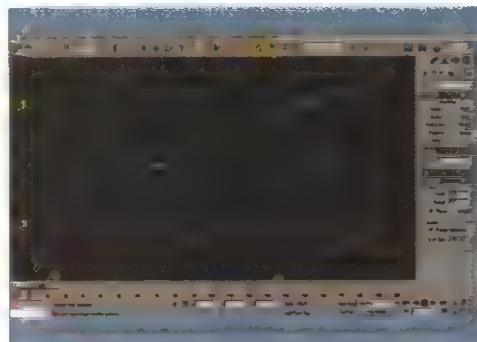


06 Select the Tornado Distribution object and right click its keyframe at frame 0. Set the Angle keyframe's Out curve to a linear attack, and click on the arrow next to the keyframe curve to pass this curve type to the next keyframe. We have a start and stop twisting motion with no acceleration. Do the same with the Tornado Render object's X Position keyframe, so you get a linear motion.

SPACE TWO | Creating Space Warps for the debris



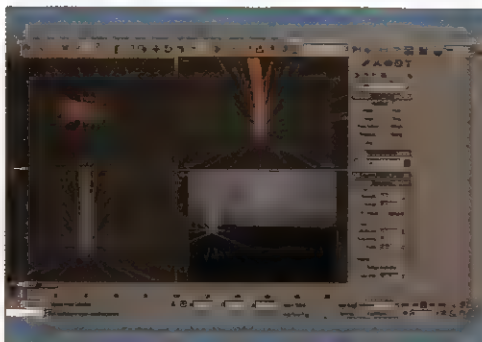
07 Link all lights and their targets to the Tornado Render object so their shadows follow it. Ensure that debris doesn't stray out of the shadow casting area defined by the light's Falloff/Field setting. In the Top Viewport, create a Deflector Space Warp that encompasses the area around the tornado. Set its Bounce to 0.5, Variation to 25, Chaos to 0.25 and Friction to 30.



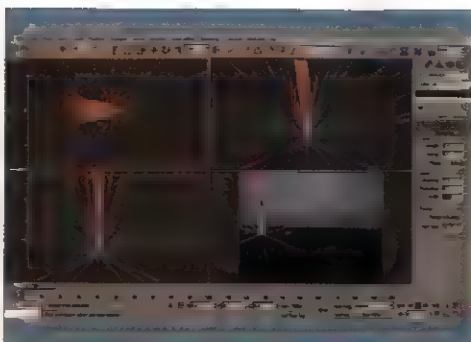
08 Copy this Space Warp and rename it 'Deflector Dust'. Set the Bounce, Variation, Chaos and Friction settings to 0 so the dust cloud sweeps across the surface. In the Top Viewport, create a Gravity Space Warp for the larger debris particles to fall back down to the ground and interact with the ground impact deflector.



09 In the Top Viewport, create a Vortex Space Warp and label it 'Vortex Dust'. Set the Time Off to 200 and Taper Length to 400. Turn off Unlimited Range, and set the Axial Drop (and its Damping) to 0, Orbital Speed Falloff to 200, Radial Pull to 0.2 and its Falloff to 1000, and Damping to 5. Align and link this Space Warp to the Tornado Render object. Rotate this Space Warp so it points upwards.



10 Copy the Vortex Space Warp and rename the copy 'Vortex Funnel'. Set the Taper Length to 200, and re-enable Unlimited Range. Set the Axial Drop to 0.1 and Radial Pull to 0.3. In the Top Viewport, Create a Wind Space Warp and label it 'Wind Dust.' Set the Strength to 0, Turbulence to 0.3, Frequency to 5 and Scale to 0.02. These settings give a fine tendrill-like design for our debris effect.



11 Align and link the Wind Space Warp to the Tornado Render object. Copy the Wind Dust Space Warp, and label the copy 'Wind Funnel Dust'. Set the Turbulence to 1 and Scale to 0.01. These settings generate a slightly different (longer) tendrill effect for the particles that travel up the funnel, to break up the overall effect somewhat.

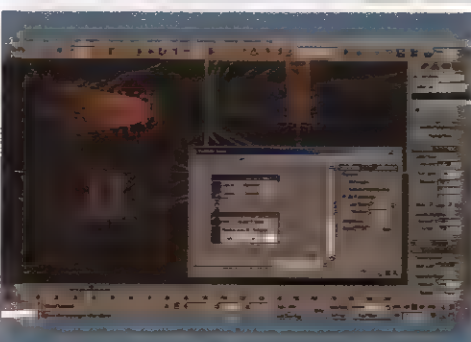
Play the Vortex

The Vortex is rotated so it passes the particles upwards from the ground and into the funnel. The Vortex's Tape Length and Curve settings define the shape of the vortex's length, with the Axial Drop affecting the strength of the pull and the direction of the vortex. The Unlimited Range is disabled so we get some 'leakage' outside of the vortex. These leakage settings will be amended with the additional Vortex Space Warps, so if you're unsure of these settings, please check the 3ds max online manual.

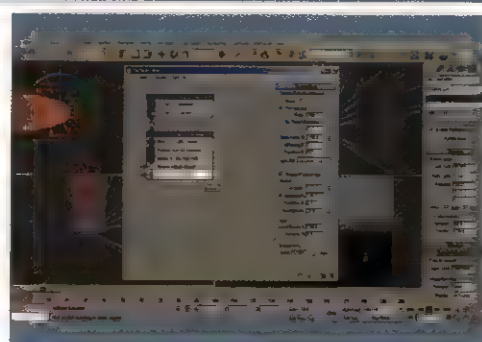
STAGE THREE | Creating the Dust and Debris particle system



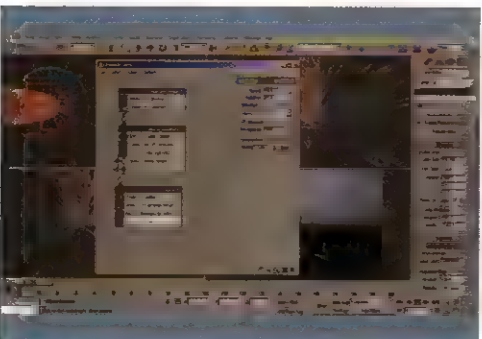
12 In the Top Viewport, create a new Particle Flow system and label it 'Dust and Debris.' Set the Icon Type to Circle and its Diameter to 100. In the System Management Rollout, set the Particle Amount - Upper Limit setting to 10,000,000, and the Render Integration Step to 1/4 frame to check for leaking particles. Align and link the system to the Tornado Render object.



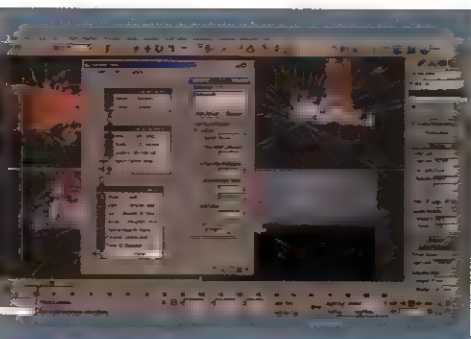
13 Open Particle View. Relocate the Display operator in Event 01 to the Dust and Debris operator, and set its Type to Geometry. Rename Event 01 to 'Debris Placement'. In the Birth operator, set the Emit Stop to 5000. Delete the Speed, Rotation and Shape operators and add a Delete operator set to By Particle Age, with a Life Span of 4 and a Variation of 2.



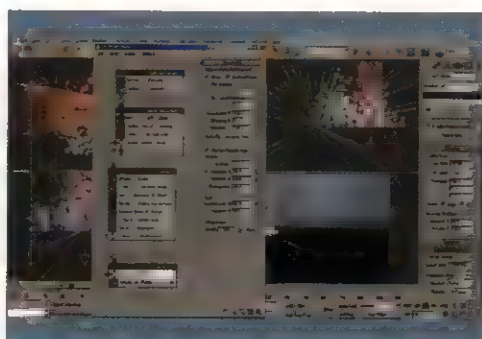
14 At frame 0, add a Spawn test to the event and label it 'Spawn Debris': set the Offspring to 2 and Offspring Variation to 100. Add another Spawn test, and label it Spawn Dust. Set it to Per Second with a Rate of 100. Turn off this test for the moment, while we set up the next event, or too many particles will be generated and this might bog down your system.



15 Add a Shape operator to the canvas to create a new event; label the event 'Debris' and remove its Display operator. Set the Shape to Cube, with a Size of 2. Add a Scale operator and set the Scale Variation to 100. Add a Spin operator, and set its Spin Rate to 250 with a variation of 100. Add a Speed operator and set its Speed to 75, Variation of 25, Divergence to 10 and enable Reverse.

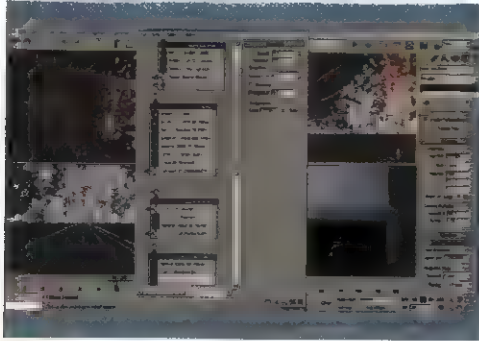


16 Add a Material Static operator. Add a Force operator, and add the Wind Dust and Vortex Dust Space Warps to its Force Space Warps list. Add another Force operator and add the Gravity Space Warp to it; set its Influence setting to 50. Add a Collision test and add Deflector01 to its Deflectors list. Wire the input of this event to the output of the Spawn Debris test.



17 To get the collided particles to break up, add a Spawn test to the canvas to create a new event and label the event 'Debris Impacts'. Wire the Collision test to the input of this new event. Enable Delete Parent in the Spawn test, and set the Offspring to 5 with 100 Variation. Set the Inherited Speed to 50, Variation to 20 and Divergence to 45. Set the Scale Factor and Variation to 50.

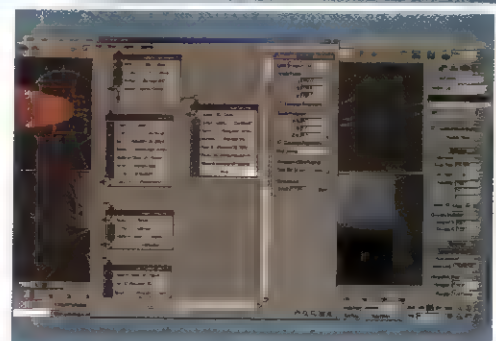
STAGE THREE (Continued) | Creating the Dust and Debris particle system



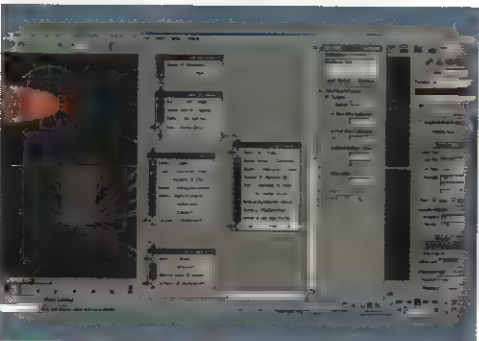
18 Instance the Gravity Force and Material Static operators and the Collision test into this event. Instance the Material Static operator to the canvas to create a new event, rename the event 'Spin & Speed Killer', and wire it to the output of the previous Collision test. Add Spin and Speed operators and set their Spin Rate and Speed settings to 0 to bring them to rest.



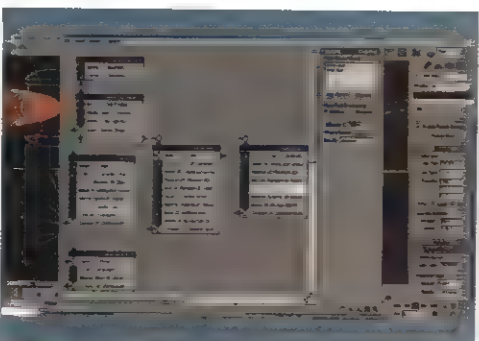
19 Add a Spawn test to the canvas to create a new event. Label it 'Dust Tendrils' and wire the input of this event to the output of the Spawn Dust test. Set its Spawnable setting to 0.2. Add a Shape Facing operator to the event and add the scene's Camera to its Look At selection. Set the Size to 3 with a Variation of 50 and set the Orientation to Allow Spinning.



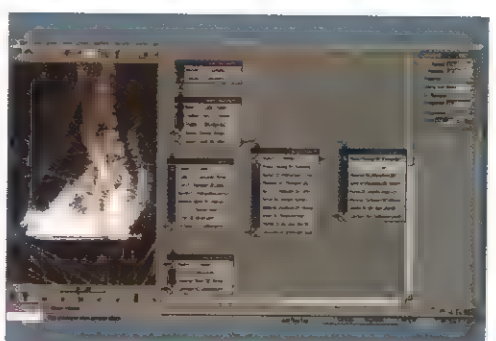
20 Add a Speed operator and set its Speed to 20 with Variation and Divergence to 10 and enable Reverse. Add a Rotation operator. Add a Spin operator and set the Spin Rate and Variation to 100. Add a Force operator and add the Wind Funnel Dust and Vortex Funnel Space Warps. Add a Material Dynamic operator and a Scale operator. Set Type to Relative First, and Sync By to Event Duration.



21 Turn off the particle system to prevent unnecessary calculations. Go to frame 60, enable Auto Key and set the Scale operator's Scale setting to 300. Turn off Auto Key and go back to frame 0. Add a Delete operator, set it to By Particle Age with a Life Span of 25 and Variation of 15. Add a Collision test to the event and add the Deflector Dust deflector to its list. Turn the system back on.



22 Select the Dust Tendrils event, and instance it to create a new event. Label this 'Dust Clouds' and wire its input to the output of the Spawn test in the Dust Tendrils event. In Dust Clouds, remove the Scale and Force operators and Spawn test, and make the Shape Facing and Speed operators unique. Instance the Force operator (Vortex & Wind) from the Debris event into this event.

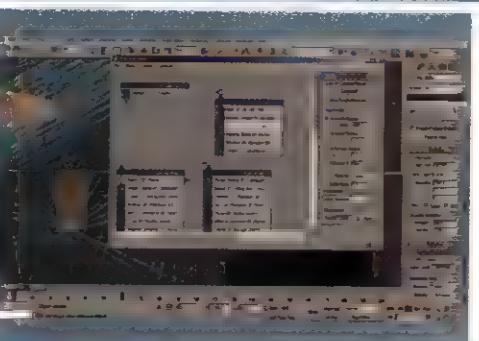


23 Set the Shape Facing operator's Size to 200, with a variation of 20. In the Speed operator, set the Speed to 10 and Variation to 5. Turn on the Spawn Dust test. The Dust Cloud event generates the large diffused debris dust clouds around the base of the tornado, so the amount of particles needs to be significantly less: hence the very low Spawnable value in the Dust Clouds event.

STAGE FOUR | Creating the funnel cloud



24 Create a new Standard Flow particle system and label it 'Funnel Cloud.' Delete the Position Icon, Speed and Shape operators. Set the Birth operator's Emit Start and Emit Stop to -10 and amount to 50, so the particles align correctly at frame 0. Add a Position Object, Shape Facing and Material Static operators above the existing Rotation operator, so it takes the rotation into account.

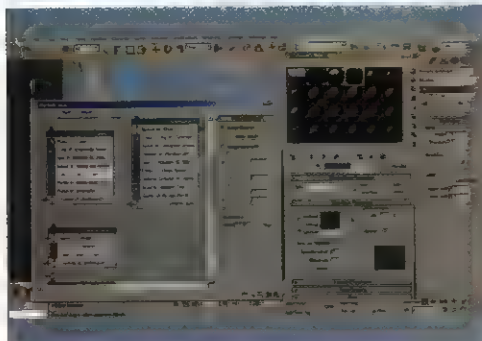


25 Enable Lock On Emitter in the Position Object operator, add the Tornado Distribution object to its Emitter Objects list, and enable Animated Shape. Enable Surface Offset, and set Min to -50 and Max to 50. Enable Density By Material. Add the Camera to the Shape Facing operator, set its Size to 400 with 50 Variation, and Orientation to Allow Spinning.

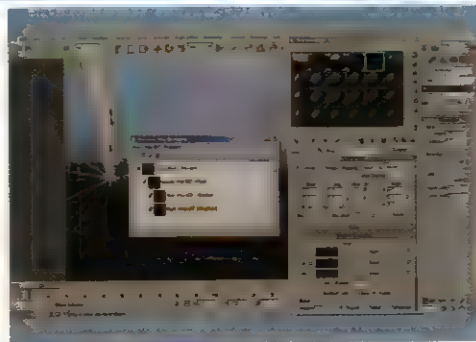


26 Label a new material 'Funnel Cloud Distribution.' Assign it to the Tornado Distribution. Add a Gradient Ramp map to the Diffuse slot, and set its W Angle to 90 to set the orientation of the map down the length of the object. Set the Interpolation of the gradient to Ease Out, and design the gradient as illustrated, so the particles are distributed where there is white, fading to none at black.

STAGE FIVE | Designing and assigning the materials



27 Label a new material 'Debris Chunks' and set its Diffuse colour to RGB 84,60,51 (derived from point-sampling the soil in the background plate). Instance this material to the Material Static operator in the Debris event - as this operator is instanced, it'll be automatically included in all other instances of this operator.



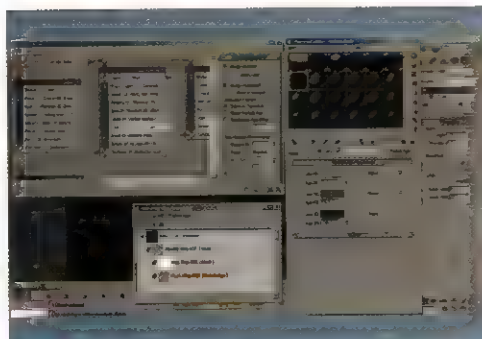
28 Label a material 'Funnel Cloud.' Set Diffuse colour to RGB 180,188,200. Add a Mask map to the Opacity slot and a Gradient map to both the Mask's slots. In the 'Map' Gradient, set Colour 3 to RGB 216,216,216, type to Radial, Noise Amount to 1, Size to 5, enable Turbulence and Levels to 10. In the 'Mask' Gradient, set Colour 2 to RGB 30,30,30, Colour 3 to RGB 50,50,50 and enable Radial.



29 Instance this material into the Material Static operator in the Funnel Cloud system. Label a new material 'Funnel' and assign it to the Tornado Render object. Add a Gradient Ramp map to the Diffuse slot, set the W Angle setting to 90 and design the gradient as illustrated with colours RGB 160,173,185 at positions 0 and 50, and RGB 67,45,36 at position 100.



30 Add a Falloff map to this material's Opacity slot, and swap the Front and Side colours. Add a Gradient Ramp map to the Front slot, and set its W Angle setting to 90. Set the colour at position 50 to RGB 156,156,156 and the one at position 100 to RGB 237,237,237 to control the perpendicular falloff (the sides) of the funnel so that it gets more opaque at the funnel's base.



31 Label a new material 'Debris Dust' and instance it into the Material Dynamic operator in the Dust Tendrils event. Set the Diffuse colour to RGB 67,45,36. Add a Mask map to the Opacity slot. Add a Particle Age map to the Mask map's Mask slot and set Colour 1 to RGB 193,193,193, Colour 2 to RGB 150,150,150 and Colour 3 to black. In the Mask map's Map slot, add another Mask map.



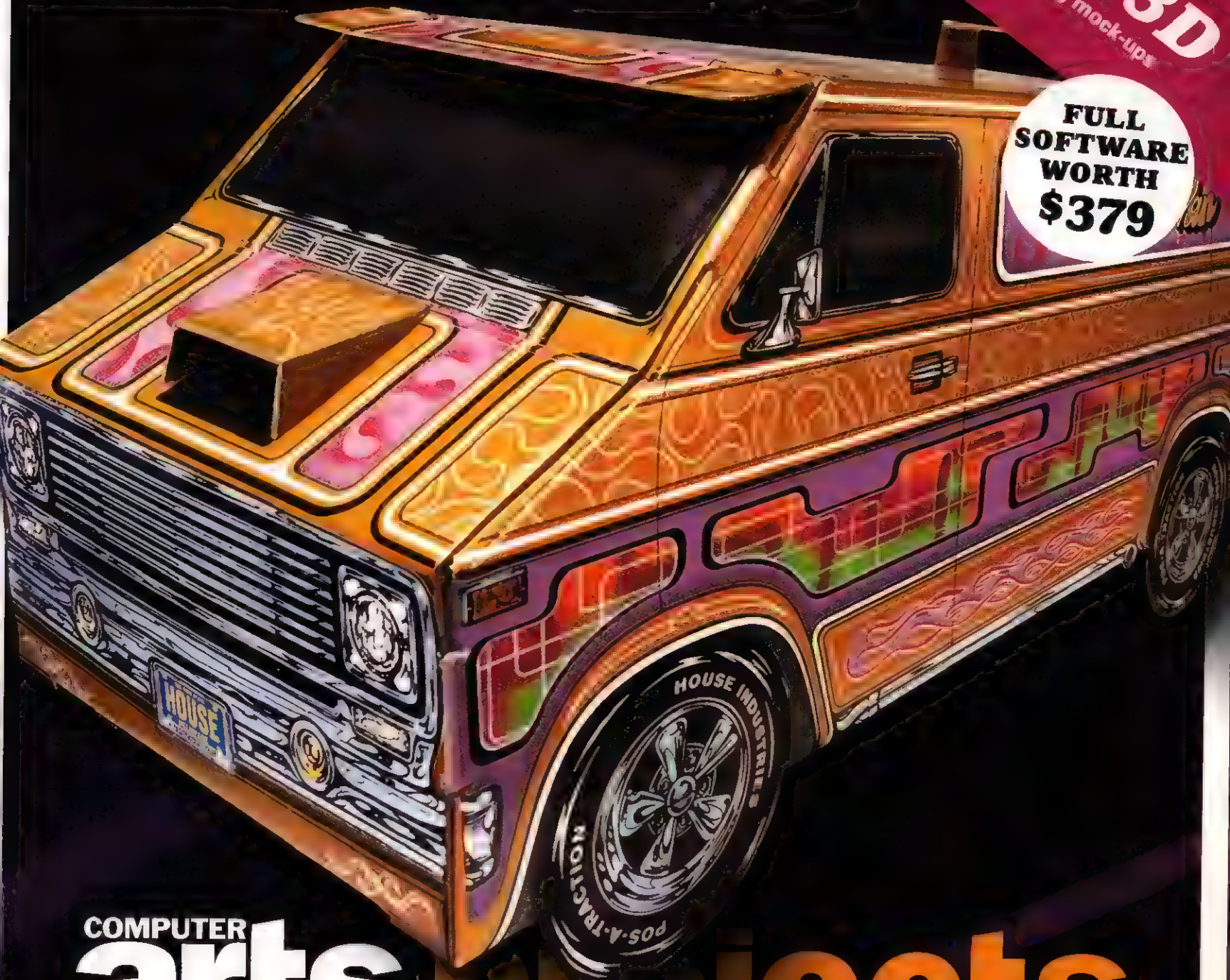
32 In this map's Mask slot, add a Gradient Ramp map, set it to Radial and design the gradient as illustrated. In the Map slot of the second Mask map, add a Cellular map. Set the Mapping to Explicit Map Channel, the first Division colour to RGB 232,232,232 and the second one to RGB 45,45,45. Set the Size to 2, Spread to 0.18, enable Fractal, Iterations to 5 and Roughness to 0.03. Set the

U Offset to 0.8 and V to 0.5 to reposition the map to see some detail. Instance the material's Opacity map tree to the Bump slot of this material and set the Bump amount to 80. Turn off Cast and Receive Shadows in the Dust Cloud and Funnel Cloud, and enable Image Motion Blur in the Debris, Debris Impacts and Dust Tendrils events. Hide the Tornado Distribution object, and render! ●

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ISSUE 68: ON SALE NOW

Smoothe visualisation

Strong architectural imagery is the key to the success of a modern Olympic bid. 3D World talked to Smoothe, a studio hoping to bring the 2012 Games to London **BY KAM MEMARZIA & RACHEL ELLIOTT**



● Design agency Smoothe produced key images for the London 2012 Olympic bid. The success of the project hinges on stills like these

On 6 July, Britain will discover whether its bid to host the 2012 Olympics in London has been a success, and whether the world will watch the events being held in venues such as Wimbledon, Lord's Cricket Ground and state-of-the-art venues in a new Olympic Park.

A reported £2.4 billion has been poured into the project by organisers of the British bid, which has been passionately supported by Tony Blair, his Government, the Mayor of London and over 200 organisations across the UK. The bid pitches this two-week sporting event as crucial in terms of its social, economical and environmental impact on London, providing regeneration for socially deprived areas and bringing new levels of visitors and tourism to the UK.

The development plans for London's Olympic Park include an 80,000-seat stadium for athletics and the Olympic ceremonies, an Olympic village where 18,000 competitors would stay, a BMX track, a hockey stadium and a multi-sport complex for basketball, handball, volleyball and modern

pentathlon events. A new transport system would deliver up to 240,000 people an hour to the Olympic Park by tube, train, bus and via park and ride schemes. Full planning permission has been granted, and work is ready to begin as soon as the result is announced. So what will it take to beat potential rivals like Paris, Madrid, New York and Moscow?

The success of this bid depends on its ability to deliver London's vision for the Olympics, and much responsibility for this momentous task has rested on the shoulders of staff at Smoother - the design and communication company appointed in August 2004 as 'official image consultant' for the 2012 Olympic bid. Smoother has seven years' experience of architectural visualisation work in Europe, the US and most recently Dubai, bringing landscapes and buildings to life with its superbly detailed and artistic imagery and animation. We caught up with Flavio Ochoa, Smoother's Production Director, and Ximo Peris, Senior Visualiser, to find out more about the 2012 bid for the Games.

WINNING THE JOB

The first challenge was to convince the numerous architectural and design bodies that form this client - namely the London 2012 Olympic Committee - that Smoother was capable of

FACTFILE

PROJECT

London 2012 Olympic bid

CLIENT

London 2012 Olympic Committee

STUDIO

Smoother

WEBSITE

www.smoother.co.uk

PROJECT DURATION

2004-2005

PROJECT TEAM SIZE

12

SOFTWARE USED

3ds max, Revit, compositing in Photoshop



► undertaking such a grand project: one that required a finely judged combination of inspiration and realism

"First, we got a 2D plan map of information on a large urban scale, and the clients challenged us to make that work from a 'human' point of view," says Peris. This was done by pulling together elements of the company's previous work to create simple images of how the visualisation would look. But the clients weren't biting, so Smoothe got proactive.

"We produced a short animation to show the team's drive and secure the bid. It was a huge effort from everybody at the office – people would stay nights and weekends to finish this. It was a real team effort," Ochoa explains. The effort paid off, and Smoothe was taken on to produce key visualisations for the project.

Challenge number two was to satisfy the conflicting demands of very different minds behind the project, all while managing the various design ideas being put to the team. "We asked for a single point of contact, but that wasn't possible," says Peris. "We're used to dealing with multiple clients. It's tricky – you try to please each one, but you don't want the image to go bland, as happens with over-edited work. You can't tell where there might be disagreements. The exterior stadium shot was a major concern to us, for example, yet it was approved with no problems."

Aesthetically, the visualisations had to be informative, open to interpretation and imagination, and still manage to hold some form of realism. "One side would want the feeling of a Mediterranean villa with butterflies included," says Peris, "and the other would rather have the CGI version of the Archigram".

The raw materials for the design arrived in a variety of formats. Models and drawings from *MicroStation*, *Maya* and *3ds max* were pooled together to create the models, with a third being remade completely in *3ds max*. "We only rebuilt the parts that were giving us trouble when rendering. The fact that they were imported would mean that they were

simple, editable meshes, and had none of the parametric properties that building from *3ds max* allows," Peris explains.

By breaking the work down into smaller chunks, which meant utilising Xrefs and rendering in stages with multiple passes, several visualisers were able to work on different shots simultaneously, and a lot more control was gained over individual elements of the images. "We would render reflection separately, which gave us much more control and allowed us to manage the rendering times," Peris continues.

YOU DON'T WANT THE IMAGE TO GO BLAND, AS OFTEN HAPPENS WITH OVER-EDITED WORK

XIMO PERIS, SENIOR VISUALISER, SMOOTHE

"At times, it was useful to render the glass as an opaque mirror, then render a matte that would give the direction of the surface. This allowed us to get more reflection on shallow angles, and less reflection when the surface was perpendicular to the direction of the camera."

THE MASTERPLAN

The overall masterplan shot showing the Olympic Park was key to portraying the grand vision of the project, both during and after the Olympic Games. To get the perfect base

photograph, a large number of images were taken using a helicopter, and stitched together in *Photoshop*. *Photoshop* was also used to remedy the washed-out look "produced by the heavy London air". The position and angle of shot show the main development site in its entirety, relating the buildings and landscaping to recognisable landmarks such as the Millennium Dome. This makes it easier for the viewers to understand the scale and organisation of the site, and how it relates to the city. By having the shadows at a low angle

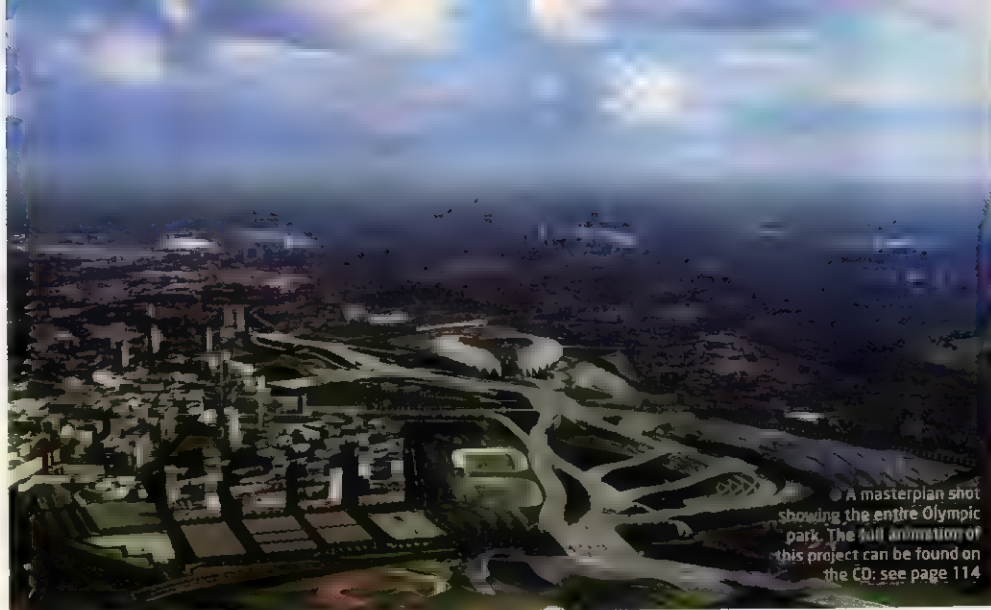
rather than midday, the definition of the buildings and the landscape are both accentuated.

The Olympic Stadium itself, the grand centrepiece

of the project, is covered with an innovative and striking roof structure, which wraps itself around the venue like muscles supporting a human body. Alejandro Zaera-Pollo, Chief Designer on the project at Foreign Office Architects (which collaborated with Smoothe) explains: "We are trying to make the building communicate the idea of physical strength, sport and movement – this is what forms the conceptual backbone of all the buildings."

To emulate the futuristic bubblewrap material used for the exterior of the stadium, which in reality will probably be a double-layered, air-filled polythene membrane, Smoothe tried a variety of techniques. "The work on the bubblewrap material on the main stadium was one of our favourites," Peris enthuses. "You don't get many opportunities to play with reflections, refractions and that kind of light in architecture. At first we tried to utilise *V-Ray* with a displacement map for the structural elements, but in this instance it didn't work so well, as it clashed with the GI solution. We were trying to reflect and refract the GI on a mesh that was displaced, which seemed to be asking for too much, so we went back to good old bump maps. These worked okay, but it required more *Photoshop* work to bring the crispness and the highlights we wanted. We gave it an IOR (Index of Refraction) of 1.2, which is not going to happen in reality, but we put that down to artistic licence."

Almost all the lighting for the project was done using GI in *V-Ray*. Smoothe used pre-calculated GI for smaller-size images on high values and reapplied the solution to bigger renders. The results were then enhanced, with a considerable amount of post-production carried out in *Photoshop*, where the files ended up with hundreds of

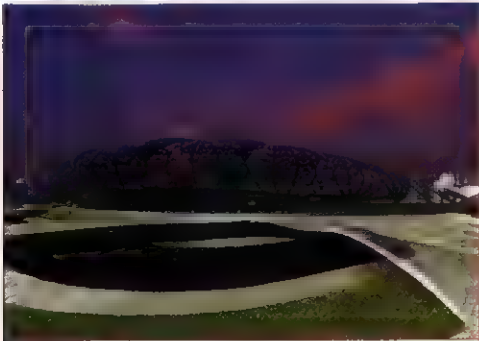


A masterplan shot showing the entire Olympic park. The full animation of this project can be found on the CD: see page 114

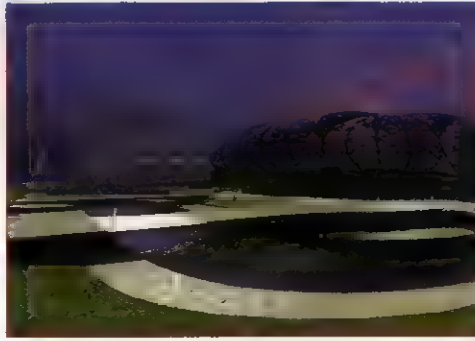


The inside of the proposed 80,000-seater athletics stadium. Raw material arrived as a mixture of *MicroStation*, *Maya* and *3ds max* models

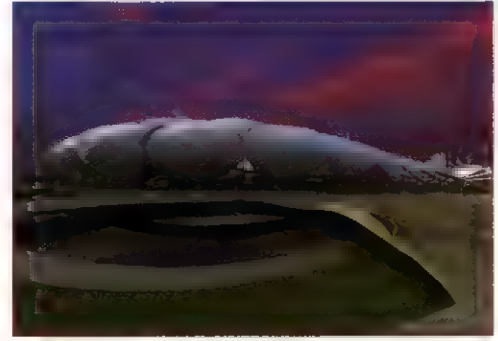
IN FOCUS | The techniques behind Smoothe's key visuals for the proposed Olympic stadium



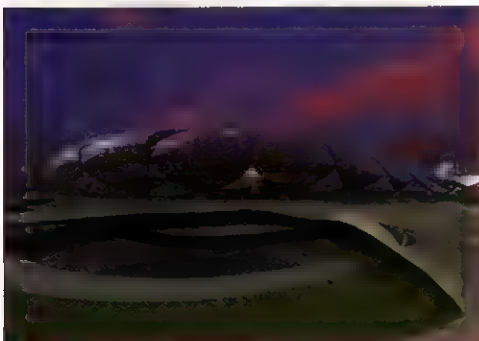
01 The starting point for the image (an external view of the Olympic stadium, showing the futuristic 'bubble wrap' cladding), using a much stronger but lower angle for the sun. The refractions on the material are an artistic licence, since in reality it would not be thick enough to be obviously refracting the light. However, a strong base adds a sense of mass and strength to the stadium.



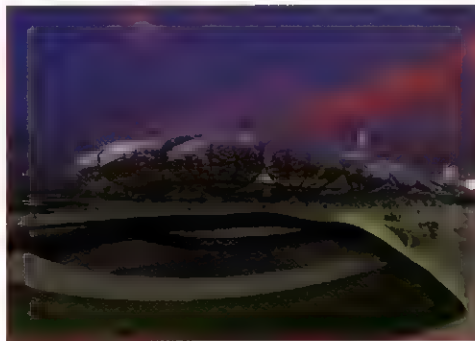
02 The Canary Wharf area of London was added to the background for perspective, and lighting applied. The water was rendered using a V-Ray material with a greenish-grey fog, a slightly blurred reflection to give it a sense of depth, light reflection from an HDR sky image, and textures on the surface using a bump map with an inverted 3ds max Smoke procedural texture.



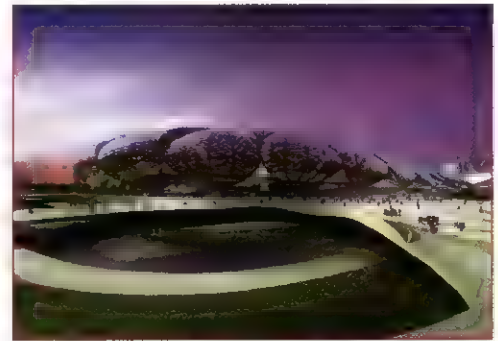
03 The architects' designs showing the placing of the bubble-wrap cladding panels were turned into a greyscale displacement map using Photoshop. This was then rendered with displacement on to the mesh. The sun was brought down to a much more reasonable level, and some internal lighting was added.



04 The displacement map now had to be changed to a bump map. The client wanted the 'bubble wrap' to look brown, but the tint wasn't quite right – it's not easy to give a colour to the refracted materials in V-Ray. There's the fog colour, of course, but it works not according to the thickness of the object but according to the distance to the objects refracted.



05 Next, Photoshop was used to decrease the amount of red from the bubble wrap material. The grass was rendered with displacement, but required further work to break the tiling and to look more natural. Two different grass maps were rendered and blended together in Photoshop; by using scale and offset, the same map variation on grass became much more realistic.



06 Adjustment layers were added in Photoshop (colour balance, levels, and dodge layers) for the new sky, to suit the much brighter light. The water was retouched in Photoshop to get darker areas right. As the team was running out of time, the rendering was done without the stadium to save time, instead using a simple object that would give a similar reflection.

layers. For the animation, the GI had to be pre-calculated for all the frames prior to rendering, which avoided some of the usual problems of flickering GI animations.

"The 'unreal' factor we faced was interesting," says Perris. "There were no lighting studies, and many lights were added to give the glow and highlights of a complex scene."

THE FINISH LINE

The final challenge to Smoothe's team was to complete the images while incorporating changes, right up to the last minute – an experience painfully familiar to those who deal with clients. "We tried to give the client a programme and work with it, but we would still get a list of changes to be made the last night before delivering. On many occasions we warned them that the quality of the project could be compromised, but they would still insist on the changes being put into place. It's part of the problem of working with people who have little experience in the field – often they

WE'D GET A LIST OF CHANGES THAT WERE TO BE MADE THE LAST NIGHT BEFORE DELIVERING

XIMO PERIS, SENIOR VISUALISER, SMOOTHE

would have us redo a whole scene to change a minor detail that we knew nobody would be able to notice..."

After successfully wrestling with the joys and pains of a large-scale project, Smoothe is one of the companies that has helped to create a single voice for the bid, in this case through stunning imagery and animation – all of which will continue as the campaign runs its course, with the UK, US, France, Russia and Spain all working to outshine each other until the result is heard. The final leg of Britain's race to host the Games is now upon us, and according to Matt Fairman, Managing Director at Smoothe, the company is currently waiting with bated breath.

"Throughout the campaign, our creative team has always maintained a genuine belief that we could make a difference to the bid's chances, and were thrilled when we learnt that Foreign Office Architects and EDAA were involved. Great architecture and a dynamic vision for both the Olympic and legacy stages will be key considerations in the bid's decision-making process. I'm confident of London's chances, and would go so far as to say that at this stage, London's proposed vision is the strongest proposition on the table. I believe the team has got things right in balancing progressive architecture with intelligent landscaping and will catch the eye of the International Olympic Committee" ●

Juan Gonzalez Diaz's latest professional job is the Balagares project, a heavy-duty visualisation of a luxury housing complex in Asturias



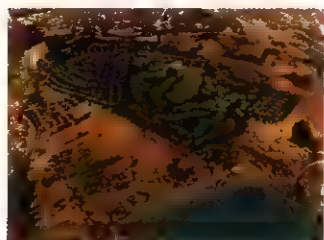
Juan Gonzalez Diaz

This self-trained LightWave artist has been tackling professional 3D projects since he was 18. We find out about his latest architectural work - and the reason why he hasn't slept for a month...

BY BEN VOST



● An aerial view of the Balagares project. The complex has around 600 houses in more than ten separate configurations



● The entire project was completed using only digital information, with terrain generated from 3D cartography of the area

Tell us a bit about yourself...

I'm a 33-year-old computer graphics enthusiast, born and working in Asturias, Spain. Like many people, I began with the Spectrum and Amstrad, but my real computer graphics background began when I bought a Commodore Amiga. Then I began to experiment with my first 3D programs - *Sculpt 3D*, *Turbo Silver* and *Imagine* - using them in commercial projects when I was only 18 years old.

When did you see *LightWave 3D* for the first time?

I first saw it in the days of the *Video Toaster*. Just from first impressions, I knew that *LightWave* was a different piece of software from all those that existed at the time: all the comments from people were along the lines of "incredible" and "powerful".

When did you first start using it?

I was working for a video company and began to use it for flying logos and simple architectural visualisation. I think it must have been version 4.0 - remember, as if it had happened yesterday, that *LightWave* completely changed my modeling and animation workflow, even today, with all the numerous competing 3D applications. I still can't get comfortable with any program other than *LightWave*.

What machine are you using at the moment?

I'm using a Dual Xeon 3.0GHz with 2GB of RAM and Quadro graphics as my main workstation. I also have a Dell Inspiron 8500 laptop for home and a render farm with about 15 computers - a mix of Athlon and Pentium IV processors, all with 1GB RAM, connected with a 1000MB switch network.

Are there any plug-ins you wouldn't be without?

I don't use many plug-ins, but I can't live without *HD Instance* from Happy Digital (which enables me to visualise complex scenes using instances) and *FPrime* from Worley Labs (to previsualise all material and illumination setups). I write all the plug-ins I use every day, especially one-touch objects and lighted torus that are available free of charge to the community here: www.arrakis.es/~juany.

What was your most recent job?

The Balagares project, a heavy-duty visualisation project for a residential complex with a golf course. It has about 600 houses in more than ten configurations. It's in a beautiful location in Asturias near a lake, and the surrounding environment had to be visualised. From the beginning, I decided that the whole project should be completed just using digital information, so I needed to create a



digital terrain model, get aerial photographs and join them together, model the urbanisation and houses, then finally put it all together in complete scenes to render final sequences in day and night lighting

How did you get the job?

I got it directly from one of my clients, Rafael Beca, an architect who has worked with my models for years. He recommended me to the publicity agency to do the work

What role did LightWave play?

Everything you see in this animation is 3D – no live footage was taken for the project. All modelling, texturing and rendering work was done with *LightWave* using only one plug-in, *HD Instance* to put native rendering of instances into *LightWave*. A lot of miscellaneous elements were made with *LightWave* as well, but some come from libraries or other vegetation modelling programs.

How long did it take to complete?

I spent about three or four weeks on personal work, and about two weeks rendering on my 1.5-machine render farm

How many people worked on the project?

I made everything! I know I should sleep more, but I worked on this project alone! Perhaps this is a good example of how powerful *LightWave* can be for small – and medium-sized – studios, where more complex software can make workflow slow and hard

How many polygons are used in your scenes?

I usually create scenes with two to four million polygons, without the use of the instancing plug-in. All this information can easily be managed by *LightWave* with one GB of RAM. *HD Instance* can multiply this number by ten or 100 without slowing down

Are you trained in architecture?

No, my background is in computing, but I'm totally self-taught in all my endeavours. I began to work with architects in small jobs years ago, and after hundreds of projects I can now manage any kind of visualisation work without problems

Do you work from objects made in CAD applications?

No, I always model in *LightWave* – only get basic lines to use as reference from CAD packages for modelling with the precision needed in architecture. I hate the technical way of modelling in CAD packages – I prefer to work in a more artistic way

Is the terrain modelled in LightWave?

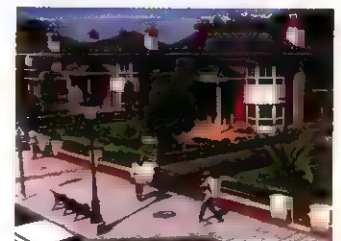
Yes, I imported 3D level curves from three-dimensional cartography of the zone. I used eight aerial photographs to make a large terrain texture map of about 8000 x 8000 pixels, then processed it to get separate colour, specular, reflection and bump maps. All the information is processed in real UTM (Universal Transverse Mercator) coordinates – putting all the elements of a scene in the same coordinate system makes sure that all the buildings, streets, the digital terrain model and images fit together without any problems in position or altitude. The final terrain model has about 300,000 polygons. On top of it I used texture layers to draw all the urban elements (streets and so on) for distant parts of the scene. In the foreground, all the urban elements are modeled in 3D, too

Do you use multipass rendering for the images?

I'm not using any kind of multipass for this project – everything has been rendered in one pass. With 1GB of RAM you can render scenes with three or four million polygons at this resolution without problems, as long as you don't use image filters or special buffers that need a lot of memory to process

What are you working on now?

I have a lot of personal projects in the pipeline that I'm hoping to develop this year. I have a huge project of 3,000 houses in the south of Spain in pre-production right now, and a lot of small projects that must be done fast, so I'm pretty busy at the moment!



For speed, vegetation-generation software and stock libraries were used for non-architectural elements in each image

MORE INFORMATION

For more info on Juan Gonzalez Diaz, or to download the movie of the Balagares project, visit www.genesisvisual.com.

ABOUT THIS ADVERTORIAL

This story was created by NewTek Europe in partnership with *3D World* magazine. Read the full version in the Community section of the NewTek Europe website www.newtek-europe.com



Q&A

SOLUTIONS / FIXES / ADVICE

Buffy may be gone, but her legacy can now live on in your own movies, thanks to this spectacularly effective vampire-slaying effect

QUESTION OF THE MONTH

Submitted by Caroline Janes
of Cheshire, UK

LIGHTWAVE

"How do I animate a vampire turning into dust, Buffy-style?"

FACTFILE

FOR

LightWave and DFX+ or
Digital Fusion

DIFFICULTY

Advanced

TIME TAKEN

One day

ON THE CD

- Live action plates
- 3D renders
- Pre-titled LightWave
and Digital Fusion files
- Final effects shot

ALSO REQUIRED

Stake, crucifix, garlic

This month's answer is supplied by Benjamin Smith, Creative Director of VFX facility Red Star Studio. He often delivers a kick to vampires, hobgoblins – and his less popular clients

"Regular readers of *3D World* will notice that in this new-look issue, this Q&A has mushroomed into no less than four fact-filled pages. And a good thing it's too, as the new format allows us some space to finally tackle some of the more complex questions that have been asked again and again over the last 60 issues, but have been rejected due to lack of space

This issue's question has popped up several times in the last few years. It has always managed to avoid being shoehorned into our old *LightWave* Q&A section, not only is it more complicated than can be explained in two pages, but the solution relies as much on compositing as it does on 3D. Although we'll use *LightWave* to generate 3D elements such as the skeleton and clouds of dust, we'll also have to do a lot of work in a compositing application to blend them convincingly with the live action, and to remove the actor from

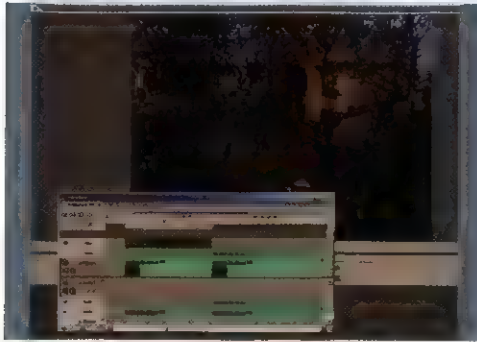
the background. For this Q&A we'll be using eyeon's *DFX+*, the 8-bit version of high-end compositing app *Digital Fusion*. The same techniques can obviously be applied in *Shake*, *After Effects*, *combustion* et al, but if you'd like to follow along in *Fusion*, you can download a demo at the company's website www.eyonline.com

DUSTIN' VAMPS

For those who've never seen Tv series *Buffy the Vampire Slayer* or its spin-off series, *Angel*, whenever a vampire is disposed of it crumbles into dust before our eyes, revealing its skeleton and innards in the process. For this Q&A, we're indebted to my friends Eddie and Cathy who joined me at an inconceivably early hour in a graveyard in Sheffield to film some vampire kung fu. After a few rehearsals and near-misses, we filmed Eddie and Cathy in two separate passes, one of Eddie's death and another of Cathy's kung fu, so we could remove Eddie from the background more easily without complicating matters with Cathy also in frame. All the files used to create this effect are on this issue's CD, so load them up and glide supernaturally toward the 24-step walkthrough on the right



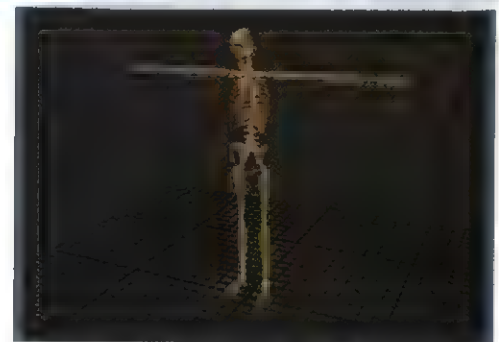
STAGE ONE | Matching the background plates



01 On this issue's CD are two background plates of Eddie and Cathy. From the footage I shot on location, I slid different takes over each other in *Premiere*, making the top layer 50% transparent to find two takes that matched, both so Cathy's kick seemed to convincingly impact Eddie's head, and so that the timing looked plausible. Both plates are saved on the disk as a sequence of JPEG images.

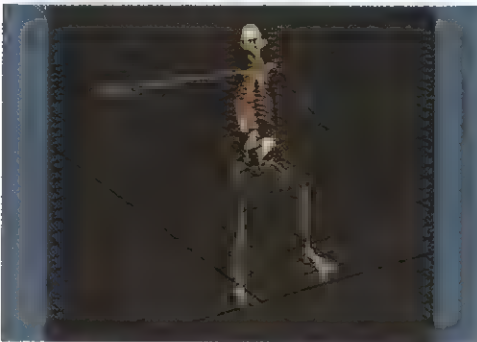


02 Load *LightWave* Layout, and set the camera to D1 (PAL) resolution. Load the Eddie image sequence and set this as the background on the compositing tab of the Effects panel. On the display panel, set Camera View Background to Background Image and you'll see the video in the camera view. Move the camera up to about 1.3m in Y to roughly match the perspective of the camera.



03 Enter *LightWave* Modeler and load the skeleton.lwo object file. This is a very simple skeleton model, which is freely available on the content CD that ships with *LightWave*. I've simplified it even more, and added a second layer containing Skelegons. Load the object in Layout and with layer 2 selected, hit Convert Skelegons on the Setup tab.

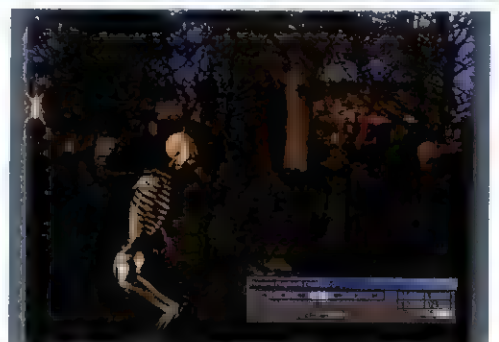
STAGE TWO | Rotoscope and render the skeleton



04 Select the first layer (skeleton:1_skeleton_body) and in Bones mode press [P] to access the properties panel. Set Use Bones from Object to skeleton:2_bones and the bones will deform the skeleton model semi-convincingly. Although clearly a real skeleton should be jointed, it's easier to just deform it with bones, and no one will ever notice the difference.



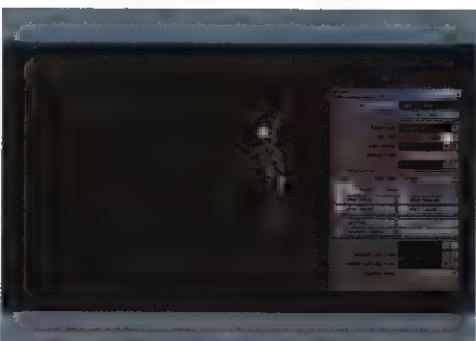
05 Go to a hero frame (say, frame 72), select the root bone and, in the camera view, position the skeleton as best you can to match Eddie's location in the frame. Pay close attention to where Eddie's hips are in the shot, and make sure you get it close enough to the camera to convincingly match Eddie's size in the frame, so the skull lines up with his head.



06 Once you're happy, start animating. The task now is to rotoscope the skeleton object over Eddie so it matches his 'performance' as closely as possible. Make sure you keep the head, hands and pelvis all lined up effectively with the relevant bits of Eddie. You can make previews in Layout to play back the animation against the live action.



07 If you're anything like me, you're spectacularly lazy, so, if you want, you can load *dusting_skeleton.lws* into Layout, where you'll see my attempt at this animation. I had to scale some of the bones to get them to fit, and I've added an IK setup on his legs to keep them on the floor.



08 Once you've done this, you can remove the live-action plate from the *LightWave* background and set up some lights to roughly match the lighting you see in the footage. A warm key coming from screen left seems appropriate, and a cooler blue fill from screen right, and possibly in the ambient light.

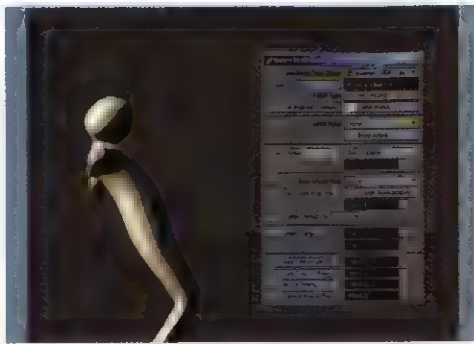


09 I've already given the skeleton a suitably icky surface shader with a few procedural textures for all the bloody gore, so you can now render the skeleton element with its alpha channel. Lots of motion blur is needed to match the blur in the background plate but again, if you're too lazy to render it, you'll find the finished element on this issue's CD.

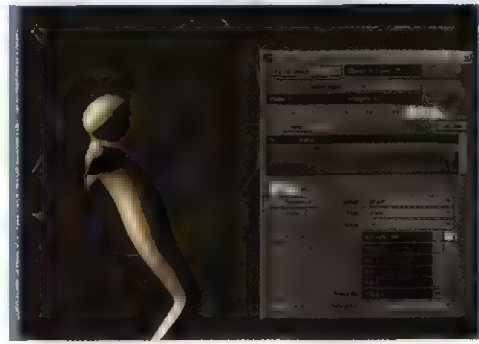
STAGE THREE | Setting up the particle effects



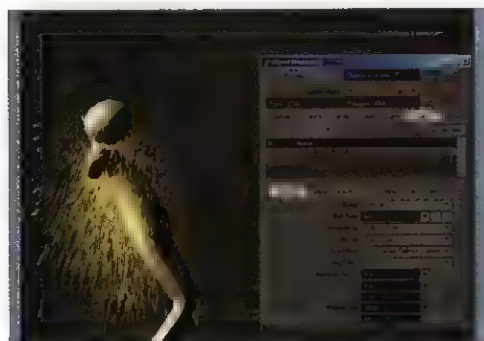
- 10** With the skeleton done, you can turn your attention to the clouds of dust that we want to appear as Eddie crumbles before our eyes. The basis of the technique I've used here is to emit particles from an Eddie-shaped object in *LightWave* and use these to render clouds of HyperVoxels dust, which can be comped in *Fusion* around the skeleton.



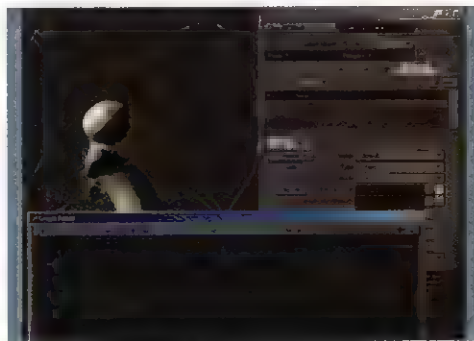
- 11** Using the skeleton animation scene, add the blob_eddie.lwo object off the CD. This is a really simple blob man roughly modelled with SubPatches to match the proportions of the skeleton. Set this object to use the bones in the skeleton:bones layer as you did for the skeleton and the blob Eddie deforms around the skeleton.



- 12** Add a null called 'Impact' and parent it to the bone in Eddie's head, so it roughly lines up with Cathy's kick. Add a Collision object from the Items tab, parent it to Impact and, in its Properties panel, set the Mode to Event. Select the blob Eddie and on the Dynamics tab of his properties panel, add the FX Emitter Dynamic.



- 13** Set Generate by to Collision Event, Nozzle to Object-Surface and Birthrate to around 600. Click Calculate to see the effect - particles are born from the surface of the 'blob Eddie' where they intersect with the collision object. Add a gravity object (set to a negative value in Y) so the particles fall appropriately, and re-calculate.



- 14** To get the final effect (which you can load from *dusting_particles.lws*), I tweaked the particle settings extensively and animated the Radius of the collision object over the course of the shot, so the dusting starts in the head and spreads over the whole body.

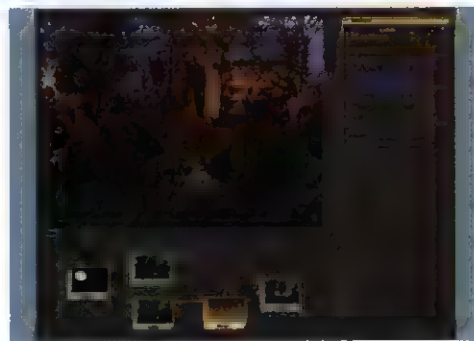


- 15** To render the dust I used HyperVoxel sprites, and devised a way to render them in two layers - one for the particles behind Eddie, and another for the particles in front of him, which is in the *dusting_particles.lws* scene. The sprites are set to render an appropriate brown/grey colour, with gradients to control their density, so they fade out with time.

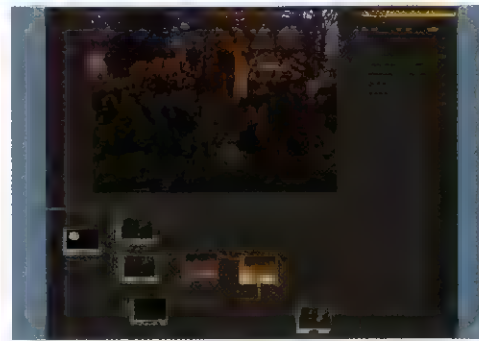
STAGE FOUR | Fusing it all together



- 16** So far we've just created 3D elements that will be used in the effect, but now we need to blend them with the live action, and get Eddie to vanish from the background plate. Load *Fusion* and add the Eddie and Cathy plates to a D1 PAL resolution flow. There's also a matte pass in the renders folder that should be started at frame 57.



- 17** Take a single frame from the start of the Eddie clip (before he enters the frame) and merge it over the Eddie plate, removing him from the shot. The next step is to add an effect mask to the merge and drag the matte pass onto it, so the matte controls the reveal, animating Eddie away. Tweak the Soft Edge slider to blur the transition a bit.



- 18** Load the Skeleton render and merge it over the shot. Right click the merge tool and go Effect Mask > Connect to > Bitmap 1 > Mask (the matte we just added over Eddie) to use the same mask here too, so as Eddie is eroded away the skeleton is revealed. Press Play and you can watch a render of the whole effect.



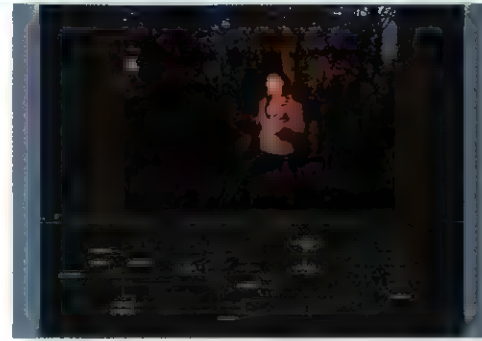
STAGE FIVE | Adding the final touches



19 Load the two dust render passes, which both start at frame 55. Merge the back dust pass under the skeleton and the front one over it, so the skeleton seems to emerge from among the dust. You can adjust the blend sliders on the merge nodes to knock the dust back slightly, so you can see more skeleton and background.



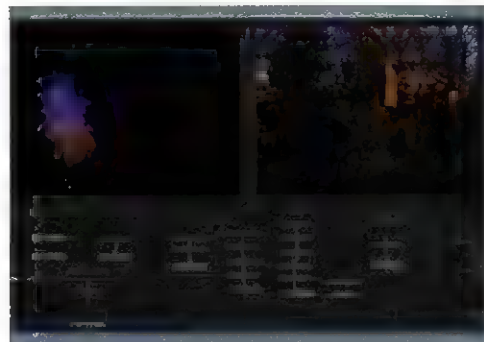
20 It looks good, except we have of course still got to add Cathy back to the shot to deliver her fatal blow. Merge the Cathy plate over the finished shot and Eddie vanishes, so right click the merge node and go Effect Mask > Polygon to add a roto mask. Click in the view to draw the points of a split screen mask to add Cathy back in the right of frame.



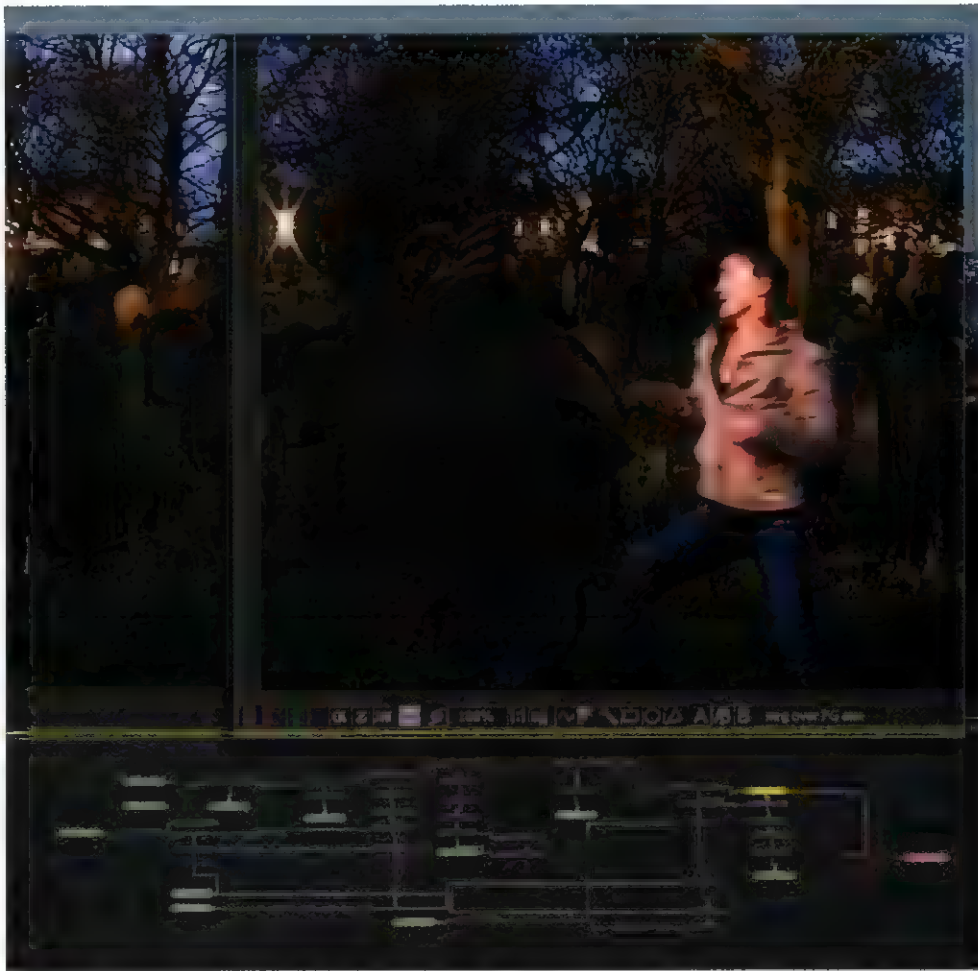
21 As Cathy delivers her well-rehearsed kung-fu move you'll find she crosses over Eddie's outline quite a bit. Welcome to the world of visual effects - you'll need a couple of handcrafted effect masks to roto scope the two of them together. What's that you say? You're too lazy to bother? Well, just load the dusting.flw file from the CD to see the finished effect.



22 I've taken the chance to add loads of extra detail to the shot, which there's not even space in this extended Q&A to describe in detail. I rendered separate passes for the skeleton and its two arms, so the arms could be in front and behind the dust as appropriate and merged into the composite at different stages.



23 I also rendered my HyperVoxels using bizarre psychedelic settings which look totally barmy in *LightWave*, but enabled me to specify the colour of the dust passes directly in *Fusion*, so I could more accurately match them into the colour palette of the background plates. There are also loads more roto and tweaks to keep Eddie and Cathy sat comfortably in the scene with the effects.



24 Check out the final dusting.mov file on the CD to see my finished shot as a QuickTime. As always, there's loads more effects and ideas you could add - it would be cool to add lumps of goo and bits of gore shooting out along with the dust. You could animate these easily using more particles, rendered with HyperVoxels set to Surface mode and quite a small size setting. Use the interaction tab

on the emitter panel so the particles clump together in nasty blobs. For a more advanced effect, you could apply HardFX rigid body dynamics to the skeleton so as it falls over it disintegrates into separate bones that fall apart and clatter to the floor. The same event collision object as triggered the particles could be used to activate the simulation so the disintegration starts at the head and works down. ●

Q&A

Our experts
this month...

3DS MAX

Pete Draper is VFX Director at Lightwrex in Bristol. He is currently working on 400+ VFX shots for new sci-fi TV series *Star Hyke*. www.xenomorphix.co.uk

BLENDER

Bassam Kurdali is a character animator and 3D addict. During work hours, he sometimes doubles as an electrical engineer. www.shkdigit.com

CINEMA 4D

Adam Watkins is the Director of CG Arts at the University of the Incarnate Word and the author of several books on *Cinema 4D*. www.cgaiw.com

HOUDINI

Jesh Krishna Murthy is a CG Supervisor at Jim Henson's Creature Shop in London. He has been using *Prisms* and *Houdini* since 1995. www.anibrain.com

MAYA

Gary Noden is Head of 3D at 422 Manchester. At the moment, he's taking a well-earned break to actually get some work done... www.422.co.uk

PHOTOSHOP

Meats Meier is an award-winning artist and animator. He is currently resident artist at the Gnomon School of Visual Effects. www.3dArtSpace.com

POSER

Ian and Dom Higgins run independent design studio SoupMedia and the low-budget film production company Pixel Revolution Films. www.livingposer.com

SOFTIMAGE|XSI

Ola Madsen is a 3D artist at Digital Context in Sweden, animating everything from teddy bears to medical treatments. www.digitalcontext.se

ZBRUSH

Glen Southern is a freelance artist and sculptor. He has been part of the *ZBrush* beta team for four years. www.southernmfx.co.uk

Quick Questions

No matter which 3D software package you use, our team of experts is here to help you out. Send us your technical query, and we'll provide a simple, concise solution



3DS MAX | Procedural material effects

Q How do I create a tinfoil material in 3ds max? Whatever I try, the reflections on the surface of the metal never match the lighting in my scene. **JAMES POTTER, VIA EMAIL**

A Creating a tinfoil material initially seems like a relatively simple task: "But don't you just apply a foil texture map and render off?" Well, yes, but only if the object is far enough away and is not affected by key lights. The problem is that the scanned/photographed image of the metal has reflections and lighting baked into it - any additional ones that you drop in won't look right. In addition, you won't be able to use the image as a Bump map due to the bump shading it generates, so you'll need to create your own shader. The shader in question is constructed using Displacement mapping generated with nested Noise maps to create large and small pitted detail for the uneven surface, with an additional Cellular map as a Bump map to create the finer cracks and seams. As this is a shiny metallic surface, you need a large anisotropic highlight and reflections that mirror the environment - an anisotropic shader within a raytrace material will do the job nicely.

As you need to make heavy use of material displacement, the material will take longer to render than a simple Bump map effect, due to the geometry being refined and displaced at render time. However, if you have *3ds max 7* (with which the scene on this issue's CD was created) you can produce an extra pass and use version 7's new Normal mapping to create shading to simulate the high displacement detail. This results in

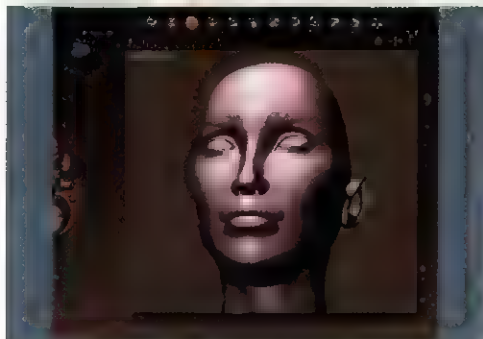
a comparable effect with a fraction of render time (bearing in mind that, again, this is a shading effect on the non-displaced low-polygon geometry). With Displacement mapping, the more work the software has to do, the longer it takes to render - use the technique sparingly on lower polygon objects and resort to other shading methods such as Normal mapping for more distant objects. To see the material setup for tinfoil in more detail, experiment with the files provided on the CD. **[PDF]**



● The material tree for tinfoil isn't difficult to set up, as this screenshot illustrates. Using a raytrace shader gives more control over the effect

POSER | How do I adjust Poser's default lighting for more realistic renders?

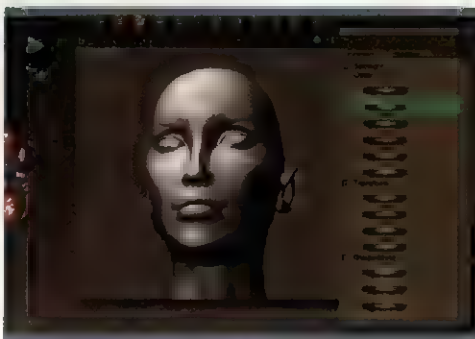
BRIAN COUSINS, VIA EMAIL



01

Reduce the number of standard lights

If you're intending to render your model or scene within Poser, you'll need to invest time in understanding how the lighting set-up works. By default, Poser uses three infinite lights. We'll start by deleting two of them, and working with just the one light (with the colour set to white).



02

Increase the map size

For precise positioning of the lighting angle in your scene, use the X, Y and Z Rotate dials on the Parameter palette. You'll also find shadow and map size settings located here. For heightened realism, increase the map size as high as you can, and soften the shadow setting (experiment with the settings). Finally, adjust the lighting intensity until you have the required level of brightness.



03

Add spotlights for creative effects

For more creative lighting, use spotlights. With these, you'll have more control over the angle of light. You can place them anywhere in a scene and, by manipulating the Distant and Angle dials (found in the Parameter palette), you can create subtle alterations in the mood of your lighting. Adding spots to a scene will increase render times, but the results will speak volumes. [L&DH]

PHOTOSHOP | Working with Z-depth data

Q

I can render out a Z-depth pass when I render in 3D programs such as *Maya* or *ZBrush*. Can I use this pass in *Photoshop* to improve the quality of my images? How do I do this? SUSAN STOGA, VIA EMAIL

A

I always include a Z-depth pass when working on my images because of the extra control that it gives me when I need to adjust specific areas that are difficult to select manually. Z-depth passes are grayscale images that represent the depth in your 3D scene. White areas in the image represent objects that are closest to the camera, while the dark areas signify the ones that are furthest away.

You can use this information in many ways within *Photoshop*: to selectively blur sections of your image (simulating a camera's depth of field), add fog effects, or use it as a depth mask to manipulate separate elements in a rendered image. It's better to render your Z-depth passes as 16-bit images, because the extra information provides higher quality results. Some Z-depth file formats automatically store the depth information in

Z-DEPTH IS A QUICK WAY TO ADD FOG TO YOUR RENDERS

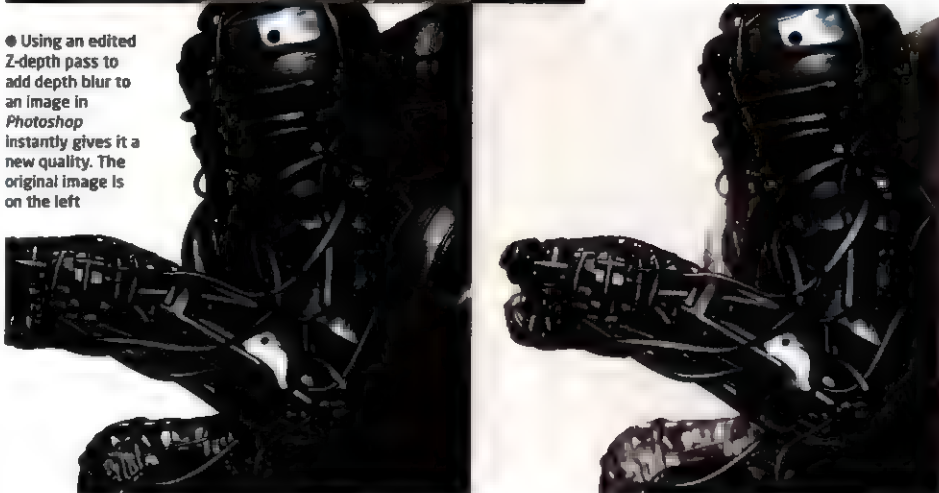
the alpha channel within the file; others write them as an extra, separate file, which then means you have to copy and paste it into your alpha channel manually.

Using the levels control on the Z-depth pass allows you to select the area of focus when deciding which areas will receive blur or fog. You can then load the channel as a new selection by clicking **Select > Load Selection** within *Photoshop* and choosing the channel containing your Z-depth. To simulate fog and blur effects, use your Z-depth selection and adjust the Brightness/Contrast or add Gaussian blur to the unmasked parts of your image. Lowering the contrast is useful for adding depth cueing to your image. Experiment with using different filters using the Z-depth masks for some interesting results. [MM]



● Adjusting the levels or curves on a Z-depth image gives you control over many parts of your image. The original Z-depth pass is on the left

● Using an edited Z-depth pass to add depth blur to an image in *Photoshop* instantly gives it a new quality. The original image is on the left



MAYA | Using animated attributes in expressions

Q How can I create realistic camera shake in Maya? Animating the motion by hand is difficult and takes far too much time **PAUL DAVIES, VIA EMAIL**

A Camera shake (the involuntary, random motion found in footage from hand-held cameras) has been all-but eradicated over the last 20 years thanks both to improving hardware technology and new high-end 2D software that stabilises its output. Despite this, if you put camera shake in 3D, it tends to intensify its reality. How about that for irony?

There are several ways you can create camera shake in Maya, but here's my favourite method, which allows you to update your camera move without losing your shake. You can use a scene of your own for this or, if you prefer, use the one supplied on this issue's CD.

Open your scene. Create a new camera. Call it 'shakeCam' and set all of its shape variables to the same as your scene camera. You want this new camera to emulate the motion of your original, but with some added shake. To do this, create a simple expression that uses a constantly updating random value added to the same position vectors of camera1 (the original) as the positions of camera2 (the shakeCam). Using a noise function on time (a constant value used often in expressions and dynamics) you get an expression that looks something like this:

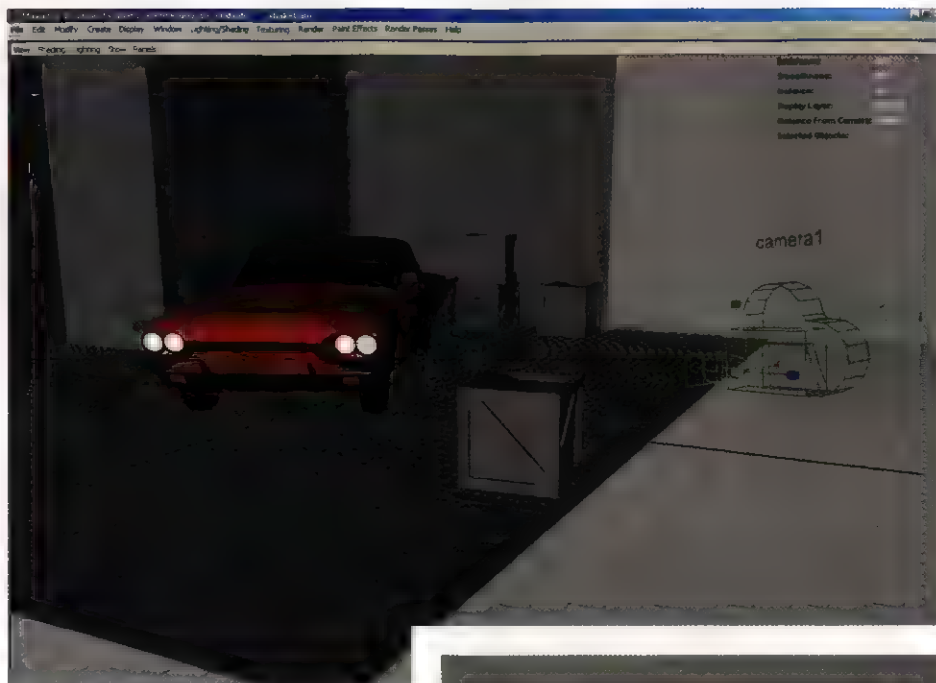
```
camera2.translateX = camera1.translateX + (noise(time));
camera2.translateY = camera1.translateY + (noise(time-2));
camera2.translateZ = camera1.translateZ
```

Note that the translateY has an offset time value. This is so the movements in X and Y aren't exactly the same.

You now have a random move, but no control over how big it is or how fast it is, or whether you want to animate these values. To do this, create two new floating point attributes on camera1. Call them 'shSpeed' and 'shMult'. Don't set any default values. They will now be in camera1's Channel Box. Set them both to 1. Now edit your expression:

```
camera2.translateX = camera1.translateX +
(noise(time*camera1.shSpeed))*camera1.shMult;
camera2.translateY = camera1.translateY + (noise(time-1)
*camera1.shSpeed))*camera1.shMult;
```

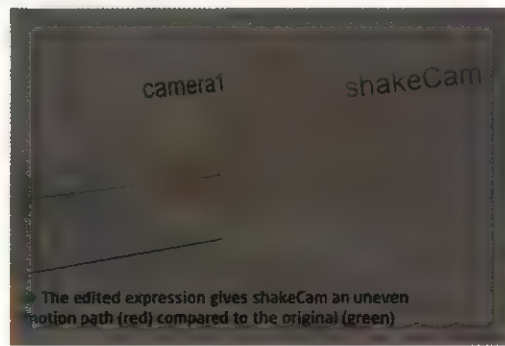
View your scene through shakeCam while tweaking camera1's new attributes, remembering to render shakeCam. [GN]



● The shakeCam sitting a little proud of camera1 after applying the first expression. Full scene file on the CD

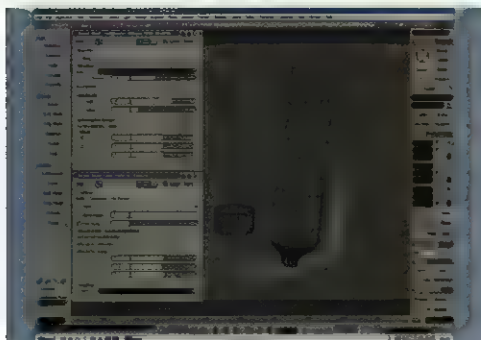
Quick Tip

Q The edited expression gives shakeCam an uneven motion path (red) compared to the original (green).

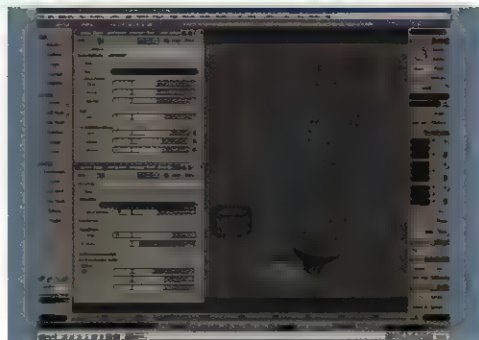


SOFTIMAGE XSI | How can I animate toothpaste coming out of the tube?

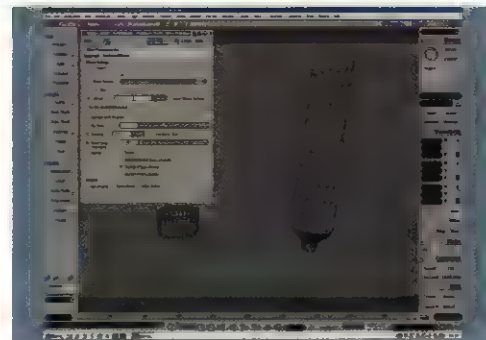
JIM HOWE, VIA EMAIL



01 Applying a Bend deformer
Load the toothpaste.scn scene from this issue's CD. Select the null called 'tube'. Click **Animate > Create > Path > Set Path** and pick the toothpaste_curve. In the Path Constrain PPG, set the Y offset to about -0.5. Select the toothpaste object and apply a Bend deformer. Change the Axis to X Axis, set the Bend direction to -90 and lower the radius to about 1. Lock the PPG by clicking the lock icon.



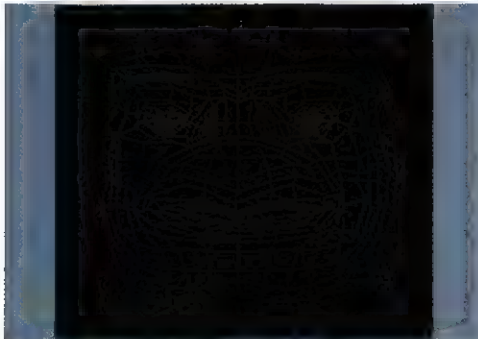
02 Modify the curve of the paste
With the toothpaste still selected, click **Modify > Deform > By Curve** and pick the toothpaste_curve. Change the Axis to X Axis and set the Translation Along curve to 6.5. Go back to the Bend PPG, set the offset along the X axis to -7.5, and click on the Animation icon next to it to set a keyframe. Now, move to frame 100, and change the offset to 6.5. Set another keyframe.



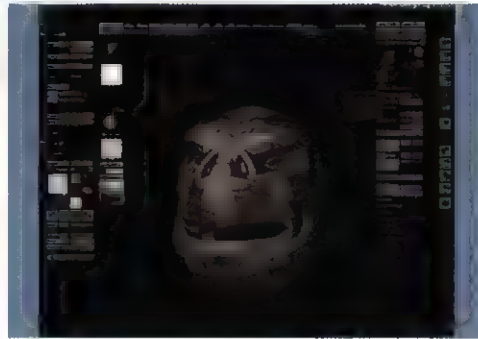
03 Parent the toothpaste to the tube
Select **Modify > Poly.Mesh > Knife Tool**, and draw a line across the toothpaste in the top viewport. Hold [Ctrl] + [End] to open the PPG. Tick the Delete Polys Above and click on the Create Grid And Connect button. With the grid selected, click **Transform > Match All Transforms**; pick the Tube null. Next, click the Parent button in the Constrain panel and select the Tube null with the middle mouse button. [OM]

ZBRUSH | How can I generate a Displacement map in ZBrush to use in Maya?

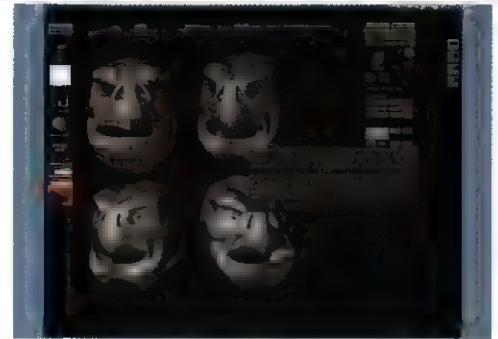
JACK MARTIN, VIA EMAIL



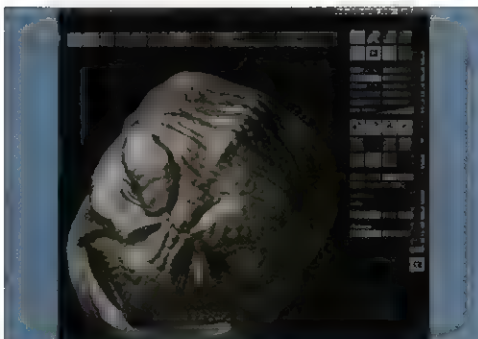
01 The basic principles
Displacement maps in ZBrush are generated by extracting data (the map) from a high-polygon model that has a low-polygon equivalent. To start the process, you need to have a low-poly model (I used 488 polygons in this example) that has UV co-ordinates applied to it before it is imported into ZBrush.



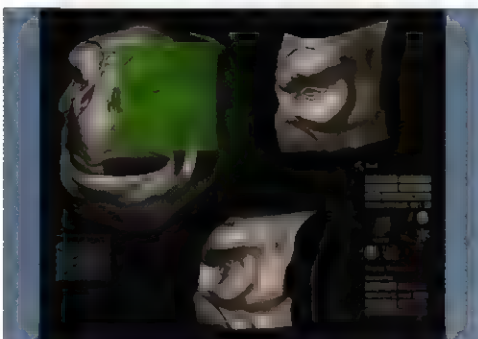
02 Load in the low-poly model
From the top menu choose Tool > Import and locate the low-polygon model (3dworld_head_488.obj on the cover CD). ZBrush can currently import OBJ or DXF formats. When it's loaded, select the head from the Tool palette and place a copy in the document window. Click and drag in the window to get the correct size and orientation.



03 Increase the subdivisions
As the head already has UVs assigned, we can go straight to adding more geometry, and then onto adding details. ZBrush does this with Tool > Geometry > Divide. The low-poly model was 488 polygons. Divide once (Subdivision Level 2) and it's 1,948 polygons. Level 3 has 7,792; Level 4 has 31,168 and so on.



04 Add the fine details
Keeping the head in Edit mode (Hotkey [T]), add the required detail. The main way to do this is to keep changing the brush settings (Draw Size, Z Intensity and Focal length) and by using the different brush settings in the Transform panel. I used Standard and Inflate for most of the detailing and occasionally Nudge, Layer, Pinch, Smooth. The resulting high-poly model is too large a file to include on our cover CD, but if you have a broadband connection, you can download it from the Stop Press section of our website.



05 Indenting and adding creases
To indent or add creases, hold down [Alt] (on a PC) and the brush pushes into the model instead of raising the affected area. To add fine detail, Divide the model to Level 7 (just under 2 million polygons). Keep re-working and adding finer and finer detail. ZBrush allows you to hide portions of the mesh, making it easier on your system.



06 Export the displacement map
When you've detailed the model to your satisfaction, lower the mesh resolution back down to Level 1 (488 polygons) using Tool > Geometry > Lower Res. Then go to Tool > Displacement > Create Disp Map. Before hitting the button, set the size of the map you require (2048 x 2048 or higher). Click Create and ZBrush calculates the map: the result

will be shown in the Alpha panel. The map (displacement_map_16bit.tiff on the CD) will be inverted in the vertical axis and will need flipping. Export it as a 16-bit TIFF file ready for use in Maya. Export the base model as an OBJ. The Displacement panel has a number of other features and settings that you can explore to improve your maps. Often, the more detail in the Displacement map, the better. [GS]

HOUDINI | How can I make a two-point poly curve displace a tube of unit size?

BOURNEMOUTH STUDENT, VIA THE FORUMS



01 Using Pythagoras' Theorem
The easiest way to achieve this effect is to use Pythagoras' Theorem: $a^2 + b^2 = c^2$ where c is the hypotenuse and a and b are the sides of a right-angled triangle. We will pass attributes from the geometry to the shader to accomplish some of this. The implementation of the theorem is explained in the .hip file that comes on the magazine CD. The VOP network that creates the displacement is shown above.



02 Setting up a SOP network
Create a new piece of geometry and bring down a grid SOP. Set it to polygons and only columns. Set the rows to be 2 and the columns to 1. Append a point SOP and create an Alpha with a value of 1. This is your diameter. Add an attribute SOP and turn Alpha into width. The completed SOP network should look like the screenshot above. Next, in a displacement shader VOP, bring down a globals VOP.



03 Finishing the calculation
To the s , append an Add constant with a value of -0.5 . Append a Multiply VOP and multiply the result by itself. Bring down a Parameter VOP and in the parameter type 'width' to access the value set at SOP level. Multiply this by 0.5 to get the radius. Multiply this by itself. Subtract the first Multiply from the second, and append a square root: this is your displacement amount. The image shows the curve rendered as a tube. [JKM]

CINEMA 4D | Manipulating expressions

Q When I put text into an Extrude NURBS and add a Look at Camera expression, the text always faces the wrong way round. Is there a way to make it face forward?
RIC_535, FROM THE FORUMS

A It would be reasonable to assume that most objects in Cinema 4D would align the intuitive way by default, when using expressions such as Look at Camera, Align to Path or Align to Spline. But, alas, they don't. Fortunately, making the necessary adjustments is simple and easy.

The Look at Camera expression keeps an object oriented at the camera, no matter how the camera rotates. To activate it, right click on an object in the Objects Manager and select Cinema 4D Tags > Look at Camera from the drop-down menu.

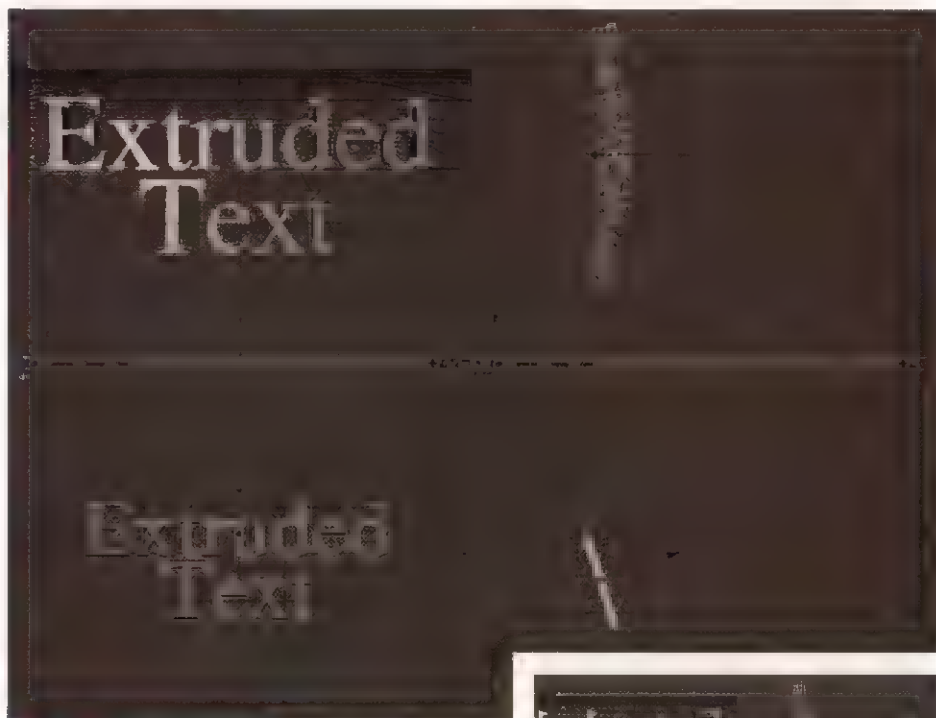
When this expression is attached to an object, its Z-axis swings around and always points at the camera. The problem is that, often, the object's Z-axis is sticking out of the back of the object, so the Look at Camera causes you to perpetually see the back of the object 'looking' at you.

TO FIX ALIGNMENT ISSUES, PARENT THE OBJECT TO A NULL

With most objects, rotating the Object Axis (to turn the object's Z-axis in a new direction) is not a difficult issue. However, once the Look at Camera expression is attached, this can cause distortions of the shape. Further, some objects - such as Extrude NURBS - don't rotate quite so easily.

For Extrude NURBS, the easiest solution - and the one with the most flexibility - is to make the shape the child of an object with a more easily manipulated Object Axis. Either create a Null Object (Objects > Null Object), and parent the Extrude NURBS to it, or select the Extrude NURBS and hit [Alt] + [G]. Now, using the Object Axis tool, you can rotate the Null Object's axis into position so you're seeing the front of the text.

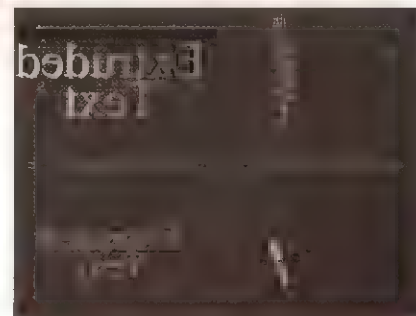
Although this may seem like a specialist solution to a rare problem, it's actually a powerful technique for similar processes such as Align to Spline and Align to Path. [AW]



Quick Tip

Since the Look at Camera expression takes an object's Z-axis as the active direction, extruded text is inverted. A fix is to add a parent Null Object

● Since the Look at Camera expression takes an object's Z-axis as the active direction, extruded text is inverted. A fix is to add a parent Null Object



BLENDER | Rigging objects

Q "How do I create fold-up sliding doors in Blender? I'd like to rig my model so that I can grab one of the panels, and move it so the rest slide along as if they were on rails."

GUARHO, FROM THE FORUMS

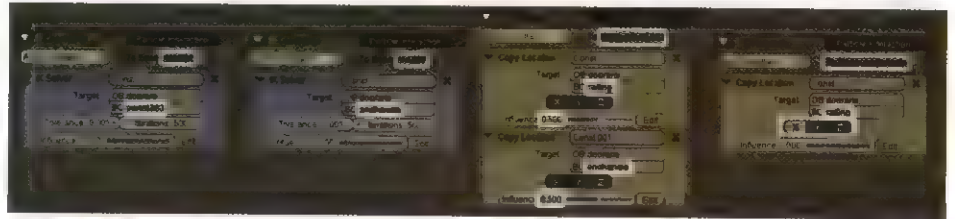
A To see how I created this system, using Blender's armatures to control the door panels, load in the scene file on the CD. The panels are meshes, and are centred and aligned as in the top image opposite. To rig the door, I went to the top view so I could see its shape, and added an armature at the location of the first panel. This armature contains two three-bone IK chains, and two free bones. The first chain is made of two panel control bones, panel.001 and panel.002, ending in a child bone called rod.002. The second chain is similar, and controls the other two panels (panel.003, panel.004 and rod.003). Also note the large bone named 'rail' that defines the line the doors slide on, and the small bone named 'endhandle'. I snapped all the joints to align perfectly with the hinges of the door, and made sure all bones were horizontal. As a final step, I normalised the roll handles by selecting all the bones in Edit mode and hitting [Ctrl] + [N]. To make the door panels move with the armature, I parented each panel to its corresponding bone

TO CONTROL THE DOORS, SEVERAL BONES ARE USED

(select panel.001, select the armature, hit [Ctrl] + [P], Parent to Bone, and select the bone named panel.001). To automate the motion of the armature, I went into Pose mode ([Ctrl] + [Tab]), then selected and constrained the bones to each other as follows: roll.002 has an IK solver constraint to panel.003, roll.003 has an IK solver constraint to the endhandle; panel.003 has two copy location constraints at 0.5 influence - one to rail and one to endhandle. This makes panel.003 always stay in the middle of the two extremes. Endhandle has a copy location constraint to rail on the Y and Z axis only; therefore endhandle can only move in the X axis, as shown in the middle image. Finally, I hid all the bones in the armature except for endhandle. The result is sliding panel doors controlled by a single bone, as shown in the bottom screenshot. [BAK]



● The door panels are copies of a simple mesh, some slightly modified from the original. Use the new Mesh Edit tools for this

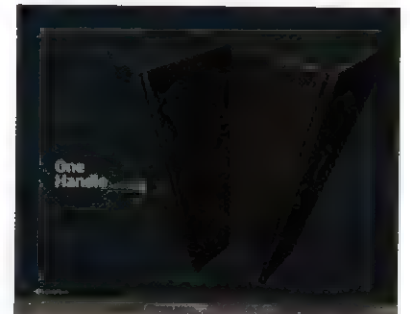


● A composite screenshot of the constraint panels for the armature bones. Important fields have been highlighted



Q

● One door, one control handle! For a better feel of the end result, watch the test movie on the CD, or play with the .blend file



CONUNDRUM | Send us your solutions to this month's brainteaser

You've read our experts' answers to our first set of Quick Questions. Now, it's over to you. Each issue, we'll be posing a real-world conundrum for you, the 3D World readers, to solve. You can read the question in the magazine each issue, and we'll also be posting it as a new thread in the Mag Related and software-specific sections of our forum. <http://forum.3dworldmag.com>

Once you think you have a solution to the problem, post a description of the technique on the forum, or email it to us at the address at the side of this page. The following issue, we'll print the best answers we've received, and reward the best entrants with a selection of 3D training resources.

And remember: you can also post questions that you'd like to see answered on the forum yourself. Our Q&A team scan the new postings each month for possible topics, and our regular users are usually happy to help out with their own tips and advice. This doesn't just apply to users of the big professional applications, either, no matter which 3D package you use, or even if you're

question concerns compositing or match-moving, we'll do our best to help you find a solution.

First conundrum | Brainteaser

The first of our conundrums is posed by 3D World reader David Martin, who writes:

"How can I animate a scene similar to the one in 2001: A Space Odyssey, in which a stewardess walks up the inside wall of a spaceship? She travels a complete 180-degree arc, and ends up 'upside down'. I'm using character studio."

As anyone who has tackled an animation requiring a Footstep driven Biped will know, things can get messy when you invert the character. Without Freeform mode and Spline Dynamics turned on the Root Node will try to remain upright even when the character is inverted. But even switching these options on isn't enough to go full circle... Over to you now, and good luck!



Training resources on offer!

Post your solutions to the conundrum on our forum, and the one we think is best will earn its author selected 3D training resources...

Forum | Post your questions at <http://forum.3dworldmag.com>

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BRITISH BEAKS!

Exclusive preview: behind the scenes on *Valiant*, the UK's first ever all-CG movie

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Learn to lip-synch the *Wallace and Gromit* way with this new tutorial by the legendary studio

ON SALE TUESDAY 1 MARCH

REVIEWS

HARDWARE / SOFTWARE / BUYERS' GUIDE



● On test this issue
(clockwise from left):
IBM Portable HD, iomega
HDD, LaCie Bigger Disk
Extreme, LaCie Porsche Hard
Drive, Amacom Flip2disk



External Storage

GROUP TEST We review five of the best portable storage solutions for 3D artists and studios currently on the market. And no, we're not talking IKEA... **BY MAT BROOMFIELD**

There used to be a time when storage meant an internal hard drive connected via SCSI or IDE to your computer: it was the only way to ensure decent performance. Installing a drive meant messing around with jumpers and power connectors and, worst of all, actually delving inside your computer. Nowadays, you're free of such inconvenience, thanks to a range of external storage solutions. Most of these can be installed as easily as pushing an electric plug into a wall socket, and they offer performance to rival the best internal drives.

Whether you own a laptop, a desktop, or a high-powered workstation, external drives enable you to vastly increase your storage, enabling you to store different projects on different drives. Best of all, you can share your drive with other users, or use it on other computers by simply unplugging from one machine and connecting to another. If the drive is bootable, you

can even run an entirely separate operating system on each external drive, enabling you to create separate configurations for different situations. Alternately, by backing your existing operating system onto a second drive, you don't have to waste time at crucial moments restoring your system.

In this, our first ever hardware round up, we wanted to cover the broadest selection of external hard drives, so we've gathered five varied solutions. Each one is ideal for a different market sector - those favouring ultra-portability, high capacity, economy, and a drive to suit any type of interface. Therefore, for marking purposes, we're not comparing the devices against each other directly: rather, the models we've chosen represent drives from one market sector, and the scores are comparisons to others of the same type (not necessarily reviewed here).

There are drives here to suit all tastes and requirements, so dive in to see how versatile your storage options have become.

TALKING POINT | Vanishing warranties

NOT THAT LONG AGO, hard drives came with warranties lasting three, or even five, years. These recognised that manufacturing methods were improving, and with ever larger capacities, people had more and more data at risk. Then all of a sudden, warranties started falling - three years, two years, one... Drives became part of the commodity market, almost

like blank CDs. Manufacturers were battling each other and seeking to shave off every penny. The only trouble is, much as cheap drives may be desirable, ask the average person in the street which they'd sooner have - low prices or reliability - and, without exception, they choose reliability. When it comes to data, no price is too high to avoid losing it.

WARRANTY

Coverage and Limits

Coverage | Excluded Products and Problems | Serviceable | Collection, Return, Rebuild & Limitation
Click here for detailed NAS Terms and Conditions.

Coverage

Omega warrants this hardware product to be free from defects in materials and workmanship to the purchaser, limited warranty is only to you, the first end-user purchaser. The warranty begins on the date specified below.

- Zip® PocketStor™ Zip® FlashStor™ PocketZip™ ZipZip™ and Clio™ drives: one (1) year
- Omega® Microdrive: One (1) year
- Zip® Zip® PocketZip™ and Clio™ drives: five (5) years
- Omega® iDisk™ iDisk™ drive: three (3) years
- Omega® U250™ Titanium ZIF disk media: ten (10) years
- Omega® external hard disk drives: one (1) year
- Omega® CD-RW drives: one (1) year
- Omega® CD-R and CD-RW drives: one (1) year
- Any other Omega hardware product unless otherwise stated: one (1) year

Excluded Products and Problems

This warranty does not apply to: (a) Omega software products; (b) replaceable components or products; hardware or software supplied with the warranted product; Omega makes no warranty, express or implied, "as is" (c) excluded is damage caused by accident, misuse, abuse, use, modification, or media in excess magnetic fields or external environmental causes.

DETAILS

PRICE
£180 / \$259 / €257*

*Currency conversion
(All prices exclude VAT)

PLATFORM
PC

MAIN FEATURES
40GB
USB 2 connection
Three-year warranty

MANUFACTURER
IBM

WEBSITE
www.ibm.com



IBM Portable HD

For laptop users, this beautiful and elegant drive proves that good things come in small packages



here's no point in having a laptop that's as light as a feather if your portable storage weighs

a ton. This ultra-portable drive from IBM is easily small enough to fit into your jeans pocket but, for optimum protection, you'd be well advised to transport it in its padded bag – which quadruples its bulk, but still leaves it small enough to fit into a briefcase.

When you buy a drive as small as this, you sacrifice two things for the privilege performance and economy. At 4200RPM, it's the slowest drive in our test, delivering a sustained transfer speed of 19.9MB per second – almost 6MB per second faster than the quoted speed.

This wouldn't be such a problem, until you realise that IBM intends for you to use this primarily for backing up your entire laptop, rather than as a data drive. A though there's no reason why you couldn't use it for data, LaCie's Mobile drives (not reviewed in this issue) provide immensely greater economy, albeit without the backup software.

Rapid Restore is the drive's *pièce de résistance*; it's intended for busy execs or salesmen who can't afford to lose time

or credibility – over lost data. Once you've set it up, the idea is that you take daily (or at least weekly) backups of your most important files. For the 3D professional, it simply affords you a better way to take an entire backup of your boot drive with you, so that if the worst does happen while you're on the road, or at a client's, you can restore quickly without losing too much face.

The IBM Portable HD connects via USB 2, and also draws its power from another USB port. It's small and effective, but way too expensive, despite its small size and light weight. Larger sizes would hold more appeal to the 3D market but aren't available, and are probably not needed by the main target audience.

VERDICT

PROS

- Small
- Good warranty
- Easy to use

CONS

- Very expensive
- Relatively slow

RANGE OF FEATURES

9

VALUE FOR MONEY

5

OVERALL

6

DETAILS

PRICE
£560.85 / \$999 / €799*

*Currency conversion
(All prices exclude VAT)

PLATFORM
PC / Mac

MAIN FEATURES
1000GB
USB 2, FireWire 400 or
FireWire 800 connection
Two-year warranty

MANUFACTURER
LaCie

WEBSITE
www.lacie.com



Bigger Disk Extreme

For users demanding the ultimate in storage capacity, LaCie provides a seductive solution



ideo-editing stations and 3D capture workstations are expensive, and you don't always want to edit

on the same machine as you capture. A large portable drive is a great solution, enabling you to keep your primary machine occupied while your editors work on the data elsewhere.

At the moment there are few, if any, hard drives offering a capacity of 500GB let alone bigger. LaCie's solution is to package four drives into a single housing, which appears to your computer as a single drive. This approach has advantages and disadvantages.

In past issues, we reviewed two similar systems from LaCie and experienced overheating problems due, we suspected, to insufficient cooling. The company now provides the system in a larger case, with a fan incorporated, so hopefully overheating will not be a problem any longer.

The drives are connected via a RAID 0 array, which enables data to be written to all four drives at once. By writing to multiple drives at a time, you can achieve massive bandwidth. The standard FireWire bandwidth is 400 Megabits (50MB) per

second, but to enable maximum sustained transfer speeds, you'll need a FireWire 800 interface, which will provide you with just short of 85MB per second – which is more than enough for the most demanding data-capture applications.

Although the drive seems expensive, it actually only works out at a very reasonable 56 pence per Gigabyte. However, one thing that does concern is the feeling of putting all your eggs in one basket. With a two-year warranty, £579 is quite a chunk to spend, to say nothing of the value of your data. If the unit fails, you lose all that capacity, so, unless you absolutely need that amount of contiguous capacity, it might be better to spread the risk over four cheaper drives.

VERDICT

PROS

- Lightning fast
- Huge capacity
- Portable

CONS

- Relatively short warranty
- All your eggs in one basket

RANGE OF FEATURES

7

VALUE FOR MONEY

8

OVERALL

8

DETAILS

PRICE
£189 / \$299 / €275.94
(All prices exclude VAT)

PLATFORM
PC / Mac
Linux / PocketPC

MAIN FEATURES
80GB
USB 2 connection
One-year warranty

MANUFACTURER
Amacom

WEBSITE
www.amacom-tech.com



Flip2disk

It's durable, and great for those on the move, but with a short warranty and high cost, is it worth it?



Those who are always out and about, or constantly moving drives between machines, might want something more robust than the norm.

The Flip2disk drive comes in a hard-top case, and the unit is mounted within silicon shock absorbers: it can withstand a fall of about two metres without suffering much damage.

Another very useful attribute for a drive that can be shared not only between machines, but also between computer platforms, is the broad range of interfacing options available. The drive has a standard interface, but then you buy connection cables of your choice. They're a little expensive, but if you need to connect to an old laptop via 16-bit PCMCIA, or to a desktop via parallel, it's your only option. Of course, virtually every modern PC, Mac, Linux box and laptop has USB or FireWire now, so this feature isn't as valuable as it used to be. In fact, everyone who has USB essentially pays a premium for a needlessly complicated interface design.

The drive comes in capacities from 20GB (useful for creating a bootable drive, or OS backup) – to 100GB, which is

ample for data transport. The unit has a maximum sustained transfer rate of 46.7MB per second via FireWire, but our USB 2 benchmark only managed 27MB per second.

Considering its high cost per Gigabyte (and the fact that it's supposed to be more durable than the competition) the drive's one-year warranty does little to inspire confidence – LaCie's ultra-portable drives come with two years, for example, and the IBM comes with three.

Amacom reminds you of the benefits of buying British, but then expects you to pay a premium for doing so. This is a really rugged drive but, in many ways, it's an anachronistic product. It looked a lot more impressive to us five years ago.

VERDICT

PROS

- Robust
- Compact
- Highly versatile connectivity

CONS

- High cost/Gigabyte
- Inadequate warranty

RANGE OF FEATURES	10
VALUE FOR MONEY	6
OVERALL	7

DETAILS

PRICE
£124.99 / \$179.95 / €169
(All prices exclude VAT)

PLATFORM
PC / Mac

MAIN FEATURES
160GB
USB 2
Two-year warranty

MANUFACTURER
Iomega

WEBSITE
www.iomega.com



Iomega HDD

Falling midway between the ultra-portables, and the high-capacity drives, is the HDD a jack-of-all-trades?



Being one of the pioneers in the removable storage market, Iomega enjoys a sterling reputation.

But how does it translate into hard drive quality?

Well, this is the first of the second-generation HDD drives, and it's slightly more compact than the previous ones, with better cooling and different styling: it's designed to lay flat or stand up on its edge. All well and good, except we noticed the power lead had a tendency to fall out because the power socket was rebated too far into the case.

The review model has a USB 2 interface, but there's also a slightly more expensive dual USB and FireWire version. Although USB 2 provides a theoretical transfer rate of 60MB per second, this only offered 31MB per second in our tests which is surprising, because it uses a fast 7200RPM mechanism. Nevertheless, this is plenty fast enough for real-time PAL or NTSC video capture. Of course, if you're simply using it for data storage, or for project files, the relevance of its speed is only in direct relation to your patience.

We reviewed a 160MB model but Iomega also does a 250GB version.

Because the drive comes with a two-year warranty you might be inclined to go for the larger drive, especially when you consider how quickly 80GB drives have become *passé*.

It has a 2MB buffer, which is on the small side – the faster the drive, the larger the buffer should be – larger buffers enable a smoother, faster flow of data. Iomega has also provided an eclectic mix of software: *Automatic Backup*, *Norton Ghost* and *Musicmatch*. The first two can be explained by their ability to backup and take images of your other drives, but why *Musicmatch*? It would be better to charge less and leave it out. Overall, this is competent, but not particularly cheap, easily surpassed by the LaCie Porsche.

VERDICT

PROS

- Low cost/Gigabyte
- Relatively fast

CONS

- Small buffer
- Not cheap for its market sector
- Odd mix of bundled software

RANGE OF FEATURES	7
VALUE FOR MONEY	7
OVERALL	8

**THIS MONTH'S WINNER**

LaCie Porsche Hard Drive

Nobody would blame you for wondering what Porsche was doing with its name on hard drives. But this sleek mid-capacity unit is certainly a performance machine

DETAILS

PRICE

• £89.36 / \$169 / €127*

*Currency conversion
(All prices exclude VAT)

PLATFORM

PC / MAC

MINIMUM SYSTEM

PC

- Windows 98SE
- 350MHz processor
- 32MB RAM
- USB 1.1

MAC

- Any Mac with USB
- 32MB RAM

MAIN FEATURES

- 200GB HD
- 7200RPM spindle speed
- 8MB buffer
- 11ms average access speed
- USB 2
- Two-year warranty

MANUFACTURER

LaCie

WEBSITE

www.lacie.com



aCie is a French company that's rapidly become a market leader in all kinds of external storage

solutions, greatly surpassing rivals Amacom, Iomega and Maxtor in just about all areas. But even with that kind of reputation, we were shocked by this drive's exceptionally good value.

It's a compact, coat-pocket-sized drive, housed in a stylish case and comes in capacities ranging from 80 to 250GB: the larger the drive you buy, the lower the cost per Gigabyte becomes.

It comes in FireWire or USB 2 configurations, and we reviewed the 200GB model, which uses the latter. An optimally configured USB 2 port is capable of transfer rates up to 480 Megabits (60 MB) per second, this drive claims a sustained rate of about 34MB, but on our systems, the fastest it managed was 28MB/s. It can also be connected to USB 1.1, although the transfer rate drops to a piddling 15MB per second.

Like all the drives in our round up, the Porsche drive is hot-swappable, which means you can connect and disconnect without restarting the computer. This emphasises its role as a transport medium between computers.

It's a plug-and play device, so under an appropriate operating system, such as windows XP, the drive is automatically detected and installed, without any special software. It then shows up in your drive list and behaves exactly like any other internal hard drive.

cheapest external solution on the market, and it's tremendous that, at this price, LaCie still has the decency to include a two-year return-to-base warranty.

And finally: the Porsche connection? Well, the drive has been designed by FA Porsche, the design consultancy offshoot

AT A REMARKABLE 45 PENCE/GB, THIS IS THE CHEAPEST EXTERNAL SOLUTION ON THE MARKET

The drive has a spindle speed of 7200RPM, and an 8MB buffer. Combined with its 11 millisecond seek time, it means that this is a unit that should be as comfortable transferring many small files as it is dealing with large ones.

It has a fairly compact power supply, and incorporates all cabling. However, it does not come with any kind of software. Although some might think this lets the drive down, we'd argue that this is a good thing, because you don't want to pay for back up software if you don't want to use it for back ups. Nor would you want to pay for the same software more than once if you buy multiple drives.

Speaking of the cost, at a remarkable 45 pence per Gigabyte, this drive is the

from the car manufacturer. It has a brushed metallic body and shiny metal end plates. It looks a bit dull on the box, but is far more pleasing once it's in your hands. This wonderful piece of kit is a more than worthy winner of our group test.

VERDICT

PROS

- Very low cost per GB
- Good performance
- Stylish

CONS

- Performed below quoted specifications

RANGE OF FEATURES	6
VALUE FOR MONEY	10
OVERALL	10



IF IT SUITS YOUR NEEDS,
WE CAN FIND NO FINER
RECOMMENDATION THAN
THE LACIE PORSCHE HD

CONCLUSION | Which storage device will suit you best?

Before we go any further, we should now mention the dangers of benchmarking. We ran a range of benchmarks on different Windows PCs, running theoretically the same USB and FireWire drivers, and each test threw up different results on different computers.

Benchmarks results are never 100 per cent dependable, and are only valuable when comparing tests performed under identical conditions. We chose the machine and benchmark software that provided the highest transfer rates to show the drives in their best light.

As we mentioned at the start of this group test, this was not a like-with-like round up. All of the drives had commonalities, such as the importance of transfer speed warranty, and the relevance of different interfacing choices.

However, your priorities for the big issues such as capacity, size and durability will vary according to your intended use.

If you need something to extend your laptop's capacity on the road, the LaCie Bigger Disk is not going to be an option, whereas if you're after a low cost per Gigabyte, you'd steer clear of the ultra-portables.

If you spend all of your time on the road, your drive is sooner or later going to take some knocks, and that's when you turn to the ultra-expensive, feather-weight IBM drive, or the reinforced, virtually nuke-proof Flip2disk.

EXTREME CAPACITY

For serious power users, the Bigger Disk Extreme is a real beast of a drive, providing the ultimate in both transfer rates and storage capacity. But although it works out at a

reasonable 56 pence per Gigabyte, it still feels like putting all of your eggs in one basket.

Unless you need a massive contiguous (uninterrupted) capacity, both the iomega and LaCie Porsche drives provide an excellent compromise. At about the size of a Stephen King novel, each is small enough to pop in a briefcase, yet both provide decent capacity and fast transfer rates.

The iomega drive is competent, but falls short compared to the LaCie model in a couple of critical areas. Given the fact that the LaCie model is bigger and cheaper, why would you look at the iomega?

It's rare that we can recommend a product unreservedly, and even here, we appreciate that it's horses for courses – but if it meets your needs, we can find no finer recommendation than the LaCie Porsche hard drive. ●

VITAL STATISTICS

PRODUCT	DRIVE CAPACITY	OTHER CAPACITIES	TRANSFER RATE	AVERAGE ACCESS RATE	INTERFACE	OPTIONAL INTERFACES	SELF-POWERED?	BOOTABLE?	DIMENSIONS (mm)	WEIGHT	SHOCK PROOF?	WARRANTY	COST PER GB	PRICE	SCORE
IBM PORTABLE HARD DRIVE	40GB	None	19.9MB/s	Unavailable	USB 2	None	Yes	Yes	16 x 76 x 142	240g	No	3 Years	£450	£180	6
LACIE BIGGER DISK EXTREME	1TB (1000GB)	16GB	84.4MB/s	10ms	USB2, FireWire 400, FireWire 800	None	No	No	88 x 173 x 25.4	59g	No	2 Years	£0.56	£550.85	8
FLIP2DISK	80GB	20GB, 30GB, 40GB, 60GB	27.3MB/s	13ms	USB 2	FireWire, PCMCIA, Parallel	Yes	Yes	29 x 90 x 127	210g	Yes	1 Year	£7.36	£189	7
IOMEGA HDD	160GB	250GB	31.1MB/s	Unavailable	USB2	FireWire	No	Yes	41 x 121 x 197	909g	No	1 Year	£0.78	£124.99	8
LACIE PORSCHE HARD DRIVE	200GB	80GB, 160GB, 250GB	28MB/s	11ms	USB 2	FireWire	No	No	35 x 112 x 188	900g	No	2 Years	£0.45	£89.36	10



MotionBuilder 6 Pro

MotionBuilder Pro returns with a new family name, a more familiar look and feel, and an extra pocket of tools for a more intuitive experience

BY CHRIS OLLIS

DETAILS

PRICE

- Free to those on a current maintenance contract
- Standard £532* / \$995
- Pro £2,244* / \$4,195 (Inc one year's maintenance)
- Asterisk denotes currency conversion at current rates

PLATFORM

PC / MAC

MINIMUM SYSTEM

PC

- Win XP
- Pentium III or higher, or AMD Athlon
- 256MB RAM
- 300MB HD

MAC

- OS X 10.3 or higher
- G4 or G5
- 256MB RAM
- 300MB HD

MAIN FEATURES

- Rig-Reconnect allows swapping of character assemblies
- Dynamic Editor for multiple-motion-curve adjustment
- Multi-Referential Constraints
- 3D paths
- Standardised and Enhanced interface
- Improved workflow

COMPANY

Alias

WEBSITE

www.alias.com

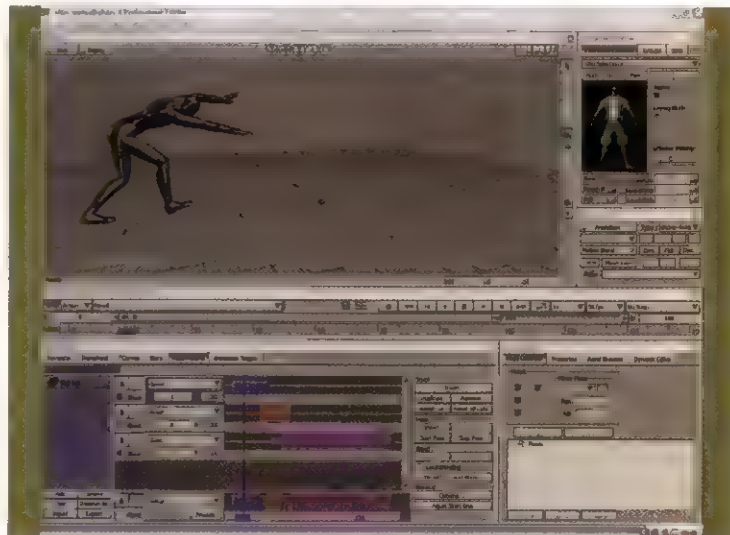


Earlier this year, animators held their breath when Kaydara became a part of Alias. Luckily (and with a fairly large sigh of relief), this didn't mean the end of its animation tool *MotionBuilder*. Here we are, a couple of months on, witnessing the release of Alias *MotionBuilder 6 Pro*.

In its continuing mission to make every animator use *MotionBuilder*, no matter what their 3D package of choice, Alias has added various enhancements to the interface to make it all seem a bit more familiar. Simple select and transform icons have been added to the sides of the viewports as well as camera navigation controls, so everyone will feel a bit more at home. Transformation planes also now appear inside the objects, and direct picking has finally appeared too!

In terms of new kit, version 6 is a trawl through a lot of simple developments on existing themes. In fact, it seems like almost every area of *MotionBuilder* has been dabbled with: a new icon here, a shortcut there... It's all good, and will make the package even easier to throw around.

Possibly the biggest addition to version 6 is a feature called 'Rig Reconnect'. Combined with a new character Control Rig Asset, it provides a way to save your rig (with any pre-specified limits, pivots, auxiliaries and sliders) and then import it into another scene to quickly connect to another character. But you aren't limited to just the one rig: multiple rigs can be imported onto



● The Motion Blend tools in version 6 of Alias's newly acquired *MotionBuilder Pro* offer users the final word in animation mixing, offering instant visual feedback and incredibly responsive control

your model, then switched between, to give your character a host of different abilities. Set-ups for holding a sword or two-handed pole, or added controls for walking up walls, doing handstands and so on can be switched between easily, avoiding the need

An autokey drops the need to hit [K] after every move, and SmartPlot is a useful keyframe baking tool which skips the unnecessary frames while retaining existing important ones. A new system for limiting bone movement called 'Degrees of

Freedom' has been introduced, which is intended to help the transition between *MotionBuilder* and the artist's main 3D

THE NEW VERSION OF THE FBX FORMAT CONFUSES THINGS, BUT AT LEAST THERE'S A CONVERTER

for a different file for each action, and making your character very talented indeed.

There's also a new Dynamic editor, which allows the editing of multiple function curves at once - so a scene containing several objects moving to the same beat can be happily re-timed as one

package, as well as fight off the occasional gimbal lock problem, and auxiliary pivots have been brought in to enhance animation and provide greater control for hand and foot contact with surfaces.

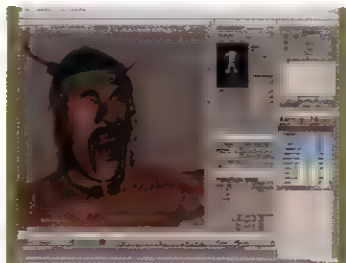
PATHS TO GLORY

Another welcome addition is the new 3D Path asset; it's nothing new in the 3D market but, up to now, it's been sadly missing from *MotionBuilder*. It's exactly what you'd expect: you can convert a Spline to a path and then constrain the desired objects, cameras or lights to it to carry them through the scene.

Also new to *MotionBuilder* - if not the rest of the world - is the 'Multi Referential Constraint'. It's a straightforward feature that allows you to lock an object to many



● As always, *MotionBuilder Pro* comes with a stack of example files and exciting motion capture files for you to sink your teeth into



● In version 6, *MotionBuilder Pro*'s facial animation tools have been brought in line with the rest of the software's interface

RELATED PRODUCTS

- *MotionBuilder 5*
- Reviewed, Issue 46



● MotionBuilder is an incredibly powerful tool with wide ranging capabilities. This character runs, jumps, kicks, punches and swings a sword through automated keyboard control

other assets as and when you want. For example, your character could be carrying a bottle in one hand (the bottle constrained to the left hand), then pass it to the other (the bottle now constrained to the right) Or, if your character climbs into a car, you could constrain him to the seat, animate the car driving around, then carry on his animation when he gets out somewhere else in the scene. It's a simple idea, but it works well, and is much quicker to perform than previous constraint procedures.

The story timeline has been updated, too, facilitating interaction, camera transitions (fading from one to another) and animated audio blending. Scene content handling has been reworked with an expanded load interface and the

introduction of Group functions that allow you to bundle together anything from characters to constraints and shaders, all of which are easily accessible from a new Group interface. A new Set species and browser enables even better scene organisation, and offers the ability to stream animation data from either memory or hard disk.

THE NEW FBX FORMAT

There's also a new version of the FBX format. Before you all choke on your coffee, don't panic. Obviously, with all the new features the format had to change to be able to record the vital data. As all the compatibility-conscious readers will surmise, this means that MotionBuilder 6 FBX files

don't open in MotionBuilder 5. This confuses the issue of FBX being a universal format, but it was inevitable that the format would be upgraded at some point, and at least Alias has included an FBX converter. It's a rather simple little filter for converting your FBX6 data to FBX5 (or FBX normal). In the age of the annual 3D software upgrade, it makes you think: "Wouldn't it make sense

IF YOU WANT TO CREATE MOVING MASTERPIECES, MOTIONBUILDER 6 PRO IS JUST THE THING FOR YOU

for more packages to carry something as handy?" Pass the word around; we'll get a 3ds max 7 file into max 2.5 yet!

Alias MotionBuilder 6 Pro is every bit as good as you'd expect, but in some respects you can't help thinking that it's another example of the forced annual upgrade that every 3D software developer now seems to feel compelled to release. What's more, this upgrade used to be come for free, and be called version 5.5.

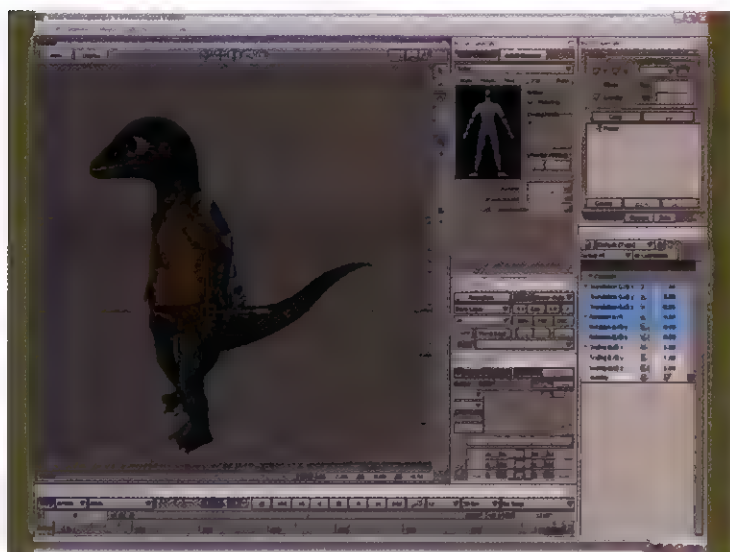
However, this shouldn't obscure the fact that MotionBuilder already covers almost all the bases in its market sector, and only has room for minor improvements. There would be no sense in adding major new features like cloth, hair or lens effects to it: that's not the point. MotionBuilder is a package for people who are serious about animating; if you want to create a moving masterpiece, this is the thing for you. But if you want to render that masterpiece, or add some fancy effects, you'll have to buy another piece of software to go with it. ●



● The software offers users a wide range of shaders to colour characters, including this rather lovely real-time cel shader



● It's very hard to resist simply applying each and every piece of mo-cap to the characters, and watching people fall over is always funny



● An improved selection of automated tools has found its way into version 6. In this case, our sartorially elegant gecko wanders about while mouse movements control both his eyes and tail

VERDICT

PROS

- Among the best animation packages around
- Powerful WYSIWYG interface

CONS

- Expensive
- Standard version doesn't include some major tools

RANGE OF FEATURES

9

VALUE FOR MONEY

8

OVERALL

8



DETAILS

PRICE

- Standard
£49 / \$92*
- Extended
£69 / \$129*
- Asterisk denotes currency conversion at current rates

PLATFORM

PC / MAC

MINIMUM SYSTEM

PC

- Windows XP
- 500MHz P4 processor
- 256MB RAM

MAC

- Mac OS X 10.3
- 500MHz G4 processor
- 256MB RAM

MAIN FEATURES

- Import wizard
- Works with most types of camera motion
- Auto lens distortion correction with export option
- Allows the import of mattes
- Exports to most major 3D applications

DEVELOPER

The Pixel Farm

WEBSITE

www.thepixelfarm.co.uk

PFHoe

It may have been named by 3D World readers (see issue 61), but will this low-cost DV camera-tracking package really do justice to your shots? **BY MARTIN SOUTHWOOD**

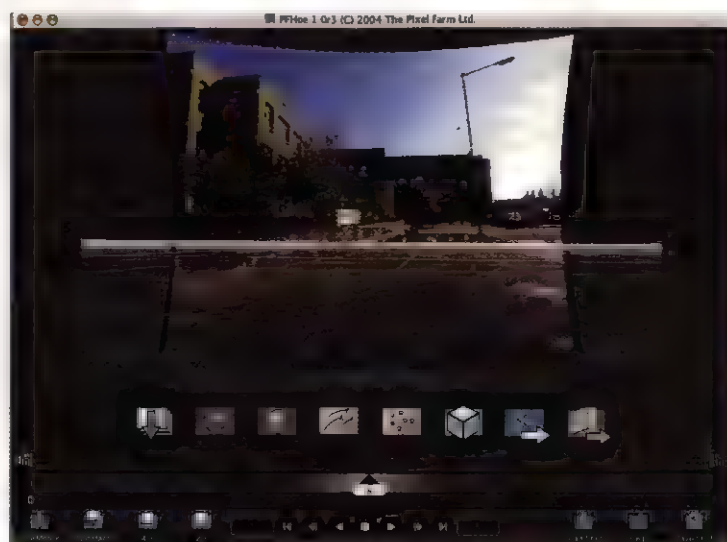


The marriage of 2D and 3D in film is a demanding union, and one that has traditionally been expensive to achieve. So heads will turn with the release of *PFHoe*, the latest digital post-production tool from UK developer The Pixel Farm.

PFHoe is a low-cost, yet powerful, DV tracking application. Available for Mac and PC, this new product makes matching computer graphics to video footage (using the same basic technology found in high-end post-production facilities) possible for any DV enthusiast or CG artist with 50 quid in their back pocket. But it's not just the cost that makes *PFHoe* so special, it's the fact that it incorporates the same technology as its high-end sibling applications *PFTrack* and *PFMatch*. It can solve just about any kind of camera motion, including zooms and nodal pans.

Designed with amateur enthusiasts and up-and-coming CG artists in mind, one priority has been ease of use. *PFHoe* makes this area of post-production open to anyone where the cost has previously been prohibitive. For the novice, a built-in set-up wizard gently guides you through the process of first tracking a project, offering guidance and explanation for initial settings (such as camera motion, focal length and aspect ratio) without making you feel totally stupid. Once you've provided this information, you can proceed to track, calibrate and orientate your footage, ready for export in a few clicks of the mouse.

PFHoe will export to most of the common CG packages with 3D support, although it's supplied with a serial code for

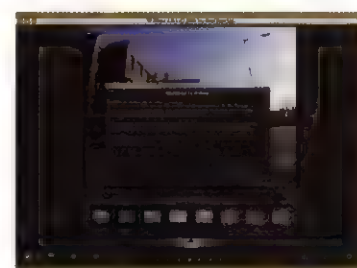


● Having clicked on a good track point, a ground plane mesh will snap to it as your point of origin. You can now orientate the scene as a 2D or 3D image until you find the best arrangement

only one of your choices when purchased, the complete set is available for an extra £20. The only tricky bit of this process is the orientation of the newly created 3D data model of your scene. The means with which to perform this task are helpfully simple to use (with Scale, Move and Rotate tools accessed from a single button), but the object of your endeavours is less clear. Given the importance of how a 3D model is set up for export when it comes to match-moving in the 3D system, some practical guidance through illustrations would help those who are new to this technology - those for whom *PFHoe* is designed.

A commendable addition to the feature set, and one not even found in high-end tracking applications, is an automatic lens distortion correction tool. The curvature of a clip (most notable with wide-angle lenses) can be removed and the clip may then be exported and fully corrected of distortion, making the task of accurate compositing much easier. Again, this is a single-button operation. For problematic shots, *PFHoe* supports the import of mattes - but doesn't provide for their creation itself.

The software does have its limitations. It only supports DV-resolution footage (*QuickTime* and *AVI* formats), and can only export 3D data, not 2D data like its big



● The set-up wizard will guide you through basic settings, such as Camera Motion, Focal Length and Aspect Ratio

brothers. There's also no manual access to alter settings or parameters.

That said, *PFHoe* remains an ideal tool for its target audience of aspiring digital film-makers and independent artists, and an attractive package for the price. ●

VERDICT

PROS

- Fast and robust auto-tracking
- Works with any type of clip, including zooms
- Excellent value for money

CONS

- Only supports *QuickTime* and *AVI* DV footage
- Exports 3D data - not 2D data

RANGE OF FEATURES

8

VALUE FOR MONEY

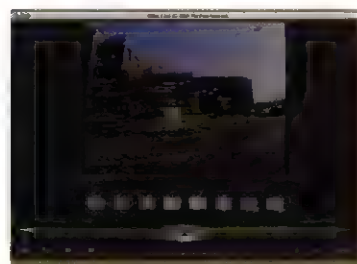
9

OVERALL

9

RELATED PRODUCTS

- *PFTrack 2*
Reviewed: issue 57
- *PFMatch*
Reviewed: issue 57



● With the click of a button, *PFHoe* sets about tracking your shot. The tracks are colour coded, as is a graphical timeline

Amapi 7.5 Pro

Hot on the heels of version 7, the latest release of Eovia's flagship professional NURBS modelling package now includes a viable rendering option **BY MIKE DE LA FLOR**

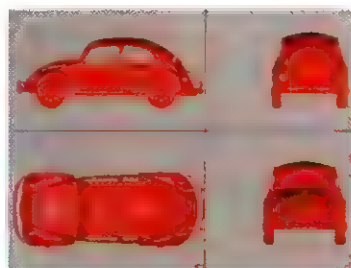


Eovia has a distinguished history of providing affordable, high-end modelling tools for 3D artists, and has become a favourite with both Windows and Mac users – *Amapi* was one of the first 3D modelling applications available for the Mac.

But despite its loyal user base, *Amapi*'s initially peculiar approach to 3D modelling made it one of those applications that you either loved or hated. Nonetheless, in 2003 Eovia launched *Amapi Designer 7*, a revamped version of *Amapi* for artists, and in March 2004 Eovia released *Amapi 7 Pro*, geared towards the professional modeller and CAD designer.

Amapi 7 Pro didn't debut merely as a successor to previous versions, rather, it was a radically redesigned product, built around an advanced NURBS kernel featuring comprehensive 2D/3D NURBS modelling tools such as NURBS filleting, connecting surfaces, trimmed surfaces and NURBS Booleans. It proved to be a flexible and creative tool that delivered engineering precision while allowing designers to move easily from concept to 3D surfaces and volumes for CAD manufacturing systems.

With the new tools came a new look, and thankfully the days of the quirky



● Modelling with NURBS is simple in *Amapi 7.5 Pro*, with intuitive box modelling, Manifold Construction and snapping assistant tools

interface were over. *Amapi 7 Pro* now sports a stable, clean, and highly customisable interface. Tools are sensibly organised, with most of the interface taken up by the 3D workspace, instead of being muddled with buttons and palettes.

CUEING FOR GIZMOS

Now, in less than a year, Eovia has released *Amapi 7.5 Pro* – and it's a comprehensive update. Notable features include a redesigned printing module to manage printing options, a faster real-time display (Eovia claims it's three times faster), real-time measurements, connecting surfaces gizmos, and enhanced depth cueing.

However, the most anticipated additions in version 7.5 include the advanced NURBS snapping assistants, which provide users



● *Amapi 7.5 Pro* enables users to go from concept to 3D surfaces and volumes, and is in tune with CAD/CAM manufacturing systems

with an accurate and easy way to draw, the enhanced Bezier 2D drawing tools, NURBS box modelling (a very cool tool indeed), and NURBS variable radius filleting.

Though a superb modelling tool for professionals, *Amapi 7 Pro* suffered when compared to more complete solutions such as *form-Z* because it lacked serious texturing, animation or rendering tools. Users had to purchase a separate 3D package to render or animate *Amapi* models. However, Eovia has solved this shortcoming by bundling *Amapi 7.5 Pro* with a texturing, animation and rendering module based on *Carrara Studio 3* rendering technology. Now, users can take *Amapi* models and texture, render and animate at no extra cost.

When Eovia entered the competitive pro modelling and CAD/manufacturing market, the sophisticated NURBS tools in *Amapi 7 Pro* put it ahead of some, although by no means all of its competitors. With 7.5, Eovia is definitely moving in the right direction and may soon overtake other rivals. When you factor in its comparatively low \$779 price point, *Amapi Pro* is emerging as a compelling choice for those who need an affordable professional solution. ●

VERDICT

PROS

- Much better NURBS modelling
- Awesome Dynamic Geometry
- NURBS Box Modelling

CONS

- Tool/command validation or termination tricky at first

RANGE OF FEATURES	8
VALUE FOR MONEY	10
OVERALL	9



DETAILS

PRICE

- £559 / \$779 / €779
- Upgrade from *Amapi 7 Pro*: £69 / \$99 / €99

PLATFORM

PC / MAC

MINIMUM SYSTEM

PC

- Win 2000/XP
- Pentium III or Celeron 800MHz
- 256MB RAM

MAC

- G4/G5 800MHz
- Mac OS X 10.2
- 256MB RAM

MAIN FEATURES

- Bezier-curve drawing and Edition tools
- Advanced NURBS snapping assistants
- NURBS box modelling
- NURBS variable-radius filleting
- CADance plug-in included
- New printing module
- New real-time display engine
- Real-time measurements
- Connecting Surfaces gizmos
- Texturing and rendering module

DEVELOPER

Eovia

WEBSITE

www.eovia.com

© Jack Whitney



● Though *Amapi 7.5 Pro* is geared towards the professional CAD designer, it is also an excellent tool for all types of modelling, as in this excellent likeness of Conan, the Californian governor...

RELATED PRODUCTS

- *form-Z 4*
Reviewed: Issue 40
- *Amapi 7 Pro*
Reviewed: Issue 54



DETAILS

PRICE

- *Live!* edition
£3,999 / \$6,495
- *Post!* edition
£2,750 (Currently only
available in Europe)

PLATFORM

PC

MINIMUM SYSTEM

- Windows 2000/XP Pro
- Intel P4 520 (2.8 GHz)
or Dual Xeon 2.4 GHz, or
Dual AMD Opteron 240
- 512MB RAM
- PCI Express or AGP-based
graphics card with Nvidia
or ATI graphics chipset
and 64MB onboard RAM
- Free 66MHz PCI slot
- For full hard drive
requirements, see website

MAIN FEATURES

- *LightWave 8*
- *Aura* (video painting and
effects package)
- *Ulead DVD Workshop*
- Live video mixing
- T-bar for controlling
video mix
- Real-time video editing
- Video Character Generator
package
- Audio tools
- Internet streaming

DEVELOPER

NewTek

WEBSITE

www.newtek.com

VT[4]

It may support real-time uncompressed editing, but is NewTek's original flagship product really the only video-production tool you'll ever need?

BY CHRISTIAN DARKIN



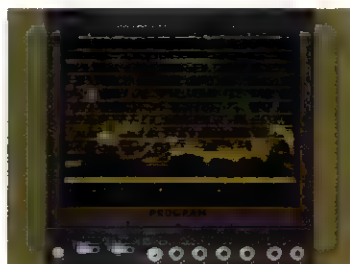
ewTek claims that it's the product that kickstarted the desktop video revolution and popularised 3D animation software. *Video Toaster*, of which *LightWave* was originally just a part, is now on version 4, and now officially known as *VT[4]*.

The first *Toaster* was marketed for the Amiga and offered users the ability to mix between live video streams and add CG effects. Things have moved since then, and version 4 offers real-time uncompressed video editing, the ability to mix live video programmes using up to 24 cameras (depending on your combination of composite and component sources), video paint effects, DVD authoring, and of course, the complete version of *LightWave*.

The hardware itself consists of a PCI card and a patch bay for plugging in all your cameras, tape machines, other *Toasters*, and up to four microphones. There's also a T-bar, which allows you to cut quickly from one source to another, and to mix using whichever live transitions you've set up.

The software is built around a powerful but easy-to-use video editor. It can handle any video compressed in any codec that your machine supports,

so you can cut uncompressed video, TGA sequences, QuickTime, DivX and DVD VOB files together in real-time on the timeline. What's more, you can play the timeline back to allow you to broadcast or stream it over the net while editing the video – useful in news or sport environments.



• Vectorscopes are provided so you can check your video images. The Character Generator has also been updated and greatly improved



• *Toaster's* titling package offers a selection of presets for lettering styles, and templates for entire screens. You can customise displays to create your own house style, but animation is limited

Version 4 also brings some useful new features. The PCI card has been altered to allow preview output from the board so you can see your work on an external monitor. This works with *Aura* and *LightWave* so you can see how your effects will look on TV.

correction and a range of other compositing tools – but it's no *After Effects* or *combustion*, and this limits *Toaster* as a post-production 'must-have'.

The most compelling thing about *VT[4]*, however, is its price. There's nothing else

that comes close to offering 3D animation, live video mixing, uncompressed video editing, and painting for under

THERE'S NOTHING ELSE THAT'S CLOSE TO OFFERING WHAT VT[4] DOES FOR UNDER £4,000

£4,000. There's even a £2,300 *Post!* edition, which includes the full software toolset but no T-bar or patch bay. This gives you a pretty good set of editing, 3D and effects tools at a cost that compares favourably with competing 3D packages.

GIVE AND TAKE

DVD authoring has also finally been added in the form of *Ulead DVD Workshop*. Despite its simple-looking interface, this is a neat authoring program which lets you create complex projects quickly and easily.

There's now a graphic equaliser and surround sound, but audio tools still aren't up to the standard of *Adobe Premiere*, and there's no hardware audio mixer. And on the video painting side, *Toaster* ships with *Aura* (the original version of Bauhaus Software's *Mirage*). It has a full set of paint tools and filters, as well as a motion tracker, colour

VERDICT

PROS

- Cheap and easy to use
- A great package of tools
- Makes the most of your hardware

CONS

- No audio mixing desk
- No proper compositor

RANGE OF FEATURES

8

VALUE FOR MONEY

9

OVERALL

8

RELATED PRODUCTS

- *Mirage*
Reviewed, issue 50
- *LightWave 8*
Reviewed, issue 53



MuscleTK 1.1

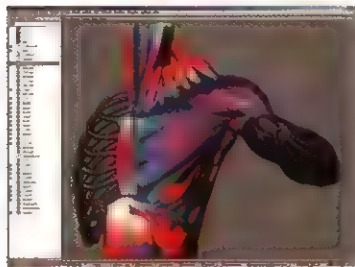
Can one of the most comprehensive character animation solutions yet produced successfully muscle its way into Maya's skinning toolset?

BY GARY NODEN



The wait for an off-the-shelf muscle system for Maya is finally over, thanks to CG Toolkit's *MuscleTK* 1.1. Aimed at technical directors, this is a package of plug-ins and scripts that's designed to integrate quickly and effectively into your character animation pipeline, all for the small price of \$99, or \$149 for a version with the full character set-up of CG Toolkit's Leon model, plus a three-DVD box set called *The Making of Leon*. But is *MuscleTK* worth it? Oh yes.

Because CG Toolkit is part of the Alias Conductors program, *MuscleTK* comes as an installer, with all the install and licence guides you'd expect. After an emailed receipt of a licence file, you're ready to go



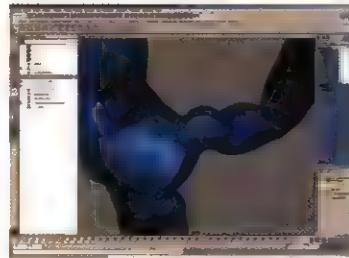
● The skin of *MuscleTK*'s sample objects flexes and deforms accurately over the muscles



● Product support is excellent. My mesh wasn't working, prior to sending to CG Toolkit for help...

Muscle creation is very simple. You can use the toolkit to build muscles and tendons based on current surfaces, or you can create patches based on your mesh, which can be converted into muscles and manipulated by *MuscleTK*'s Action Line tool. All of these work in conjunction with your skeleton via the parenting of created locators to joints. After this, you can add soft-body dynamics to give your muscles weight. For a new plug-in, this is all very impressive.

But the real strength of this doesn't reside solely in the plug-in. *The Making of Leon* may sound like a 30-minute documentary, but it's actually an essential guide to character animation across three DVDs. The 'analogue' DVD shows the creation of a clay maquette in detail, while the 'digital' DVD is a powerhouse of tutorial videos on 3D model building, shading,



● ...but here's the returned scene with action lines on muscles, warp-deforming my mesh

texturing, rigging, skinning, weighting, MEL scripting and GUI creation – all using supplied scenes, texture maps and so on. It's one of the most comprehensive character animation solutions produced.

But how does it fare in relation to similar plug-ins? A near equivalent is the upcoming *CATMuscle* (www.cattoolkit.com), but this will only be available to 3ds max users. It also has a variety of built-in rigs, which *MuscleTK* doesn't. Free muscle plug-ins for Maya are available at Highend3d.com, but they don't come close to this and aren't supported or endorsed.

MuscleTK has superb support: I was having some trouble and the company's TD took my scene and corrected it, returning it to me with an AVI video explaining exactly what he'd done. Coupled with *The Making of Leon*, it becomes an almost indispensable guide to every part of the character building and rigging process. Most large firms may already have similar tools as part of their production pipelines but, for small studios, this is as close to a final character solution as you'll currently get. Buy *MuscleTK*, but fork out the extra £26 for the DVD box set, too. You won't regret it. ●

DETAILS

PRICE

- Standard: £53* / \$99
- *MuscleTK* and *The Making of Leon* DVD: £79* / \$149
- Asterisk denotes currency conversion at current rates

PLATFORM

- PC / Linux
- OS X version to be announced

MINIMUM SYSTEM

- Any system capable of running Maya 5.0 or 6.0

MAIN FEATURES

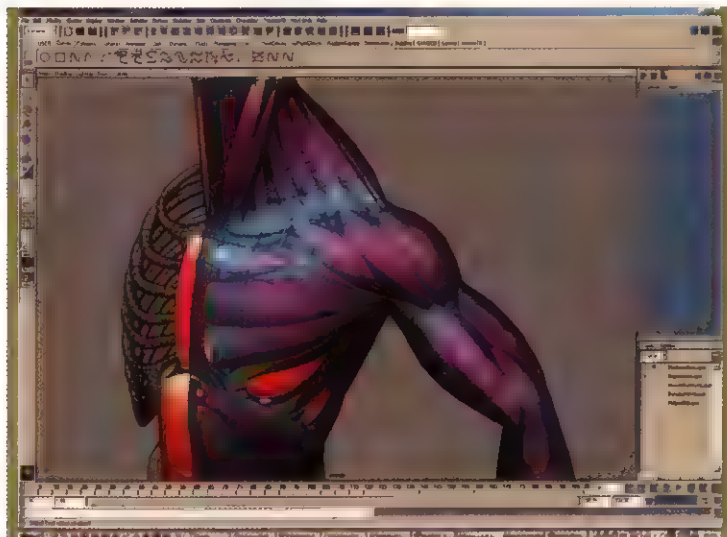
- Ability to convert NURBS to muscles
- Action Line deformers simulating muscle motion
- Creates controllable soft bodies on muscles
- Works in conjunction with smooth-bound meshes
- Complete process of character creation/animation covered in *The Making of Leon*

DEVELOPER

CG Toolkit

WEBSITE

www.cgtoolkit.com



● The sample muscles and skin look fabulous prior to skinning, all lovely and sinewy... But then as CGToolkit supplied them, you'd expect them to, wouldn't you?

VERDICT

PROS

- Simple to use
- Produces convincing muscle movement

CONS

- No initial skeletal rig set ups
- Creating a muscle skin is tricky in an orthographic view

RANGE OF FEATURES

10

VALUE FOR MONEY

9

OVERALL

9

RELATED PRODUCTS

- *CAT*
Reviewed: Issue 50
- *Absolute Character Tools*
Reviewed: Issue 38

DETAILS

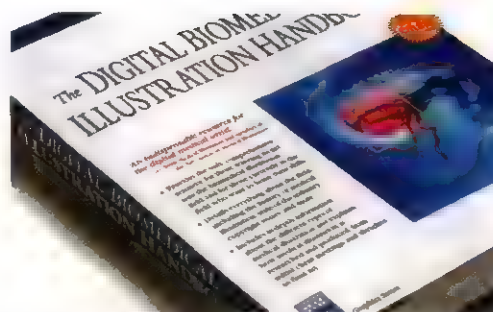
AUTHOR
Mike de la Flor

PUBLISHER
Charles River Media

PRICE
£31.97* / \$59.95
(*Currency conversion)

PAGES
400

ISBN
1-58450-337-8



The Digital Biomedical Illustration Handbook

Regular readers will be familiar with Mike de la Flor, who contributes regularly to the magazine. Here, he dishes up a hefty resource on medical illustration in book and CD format.

And when we say hefty, we don't just mean the book's weight. This title tells you all about the industry: its history, where it's at now and how to get into it – with plenty of interviews. The subject is dissected into parts, ranging from surgical illustration using *Photoshop CS* to medical illustration for the web – the latter covering box modelling for

real time 3D with *3ds max 6*. There's even a chapter on veterinary illustration, should that be your calling, with tutorials on the perfect hairy hoof.

The tutorials are clear, varied and in full colour, with accompanying files on the CD. 3D artists will like Chapter 11 on molecular and cellular animation, a lesson on the body and 3D visualisation rolled into one. ●

VERDICT

A gutsy tome that's vital for the medical illustrator, and fascinating for 3D artists

9

DETAILS

AUTHOR
Carol MacGillivray & Anthony Head

PUBLISHER
Focal Press

PRICE
£24.99 / \$36.95

PAGES
320

ISBN
0-240-51910-8



3D for the Web

As Anthony Head's career after *Buffy* involved 3D animation (as well as his appearances on *Little Britain*)? The book never gives us a definitive answer, and we very much doubt it, but we've got our fingers crossed, nonetheless...

Subtitled 'Interactive 3D animation using *3ds max*, *Flash* and *Director*', it's aimed at two types of reader: web designers wanting to transform their work with 3D, and 3D animators wanting to produce work for the web. You can skip Chapter One on the basics of 3D (perhaps pausing to find

out the answer to the section called 'Why we all love buttons').

One nice touch is that every chapter ends with an interview of an individual working in that particular field. The tone is light and there's no trace of code – just a well-paced introduction to subjects such as making characters in *Shockwave*, terrain building and producing 3D games. ●

VERDICT

An introduction to web 3D for those new to the subject – light enough to read on the train

7

DETAILS

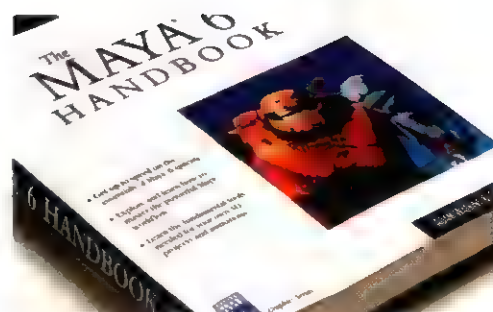
AUTHOR
Adam Watkins & Chris Neuhahn

PUBLISHER
Charles River Media

PRICE
£26.63* / \$49.95
(*Currency conversion)

PAGES
400

ISBN
1 58450-351-3



The Maya 6 Handbook

The *Maya 6 Handbook* is an A to Z of sorts: a book that covers all areas, but doesn't quite zoom in to any in great detail. The advantage of this is breadth: for those getting to grips with *Maya*, it guides you from 3D workflow itself to the interface and tools, before shifting a gear with tutorials. The disadvantage is the lack of depth: subdivision modelling, for example, is tackled in under 30 pages.

For beginners, this is a great way to get started: the black-and-white tutorials may look unappealing, but full-colour

screenshots are on the CD, along with finished files. But the fact that one section is entitled 'What is animation?' illustrates the book's limits for more experienced users.

This is very much a book for people who intend to use *Maya* in personal work; those aiming to work professionally will want to see more content geared towards the kind of jobs being tackled in the industry. ●

VERDICT

A thorough overview of *Maya*: ideal for beginners and those producing their own projects

6

DETAILS

AUTHOR
Daniel Gray

PUBLISHER
Maya Press

PRICE
£27.99 / \$39.99

PAGES
200

ISBN
0-7821-4274-5



Creating Striking Graphics with Maya & Photoshop

This is more like a magazine than a book. Chapters read like features; each one is a project case study, a profile, and a lesson in technique – all rolled into one. It's an entertaining read that's packed with stunning imagery.

Although the book shows what can be done by combining *Maya* and *Photoshop*, with a mix of tutorials and first-hand knowledge, the hands-on content is limited. Instead, its strength is the 'how did they do that?' factor. *Creating Striking Graphics* contains an abundance of real-world

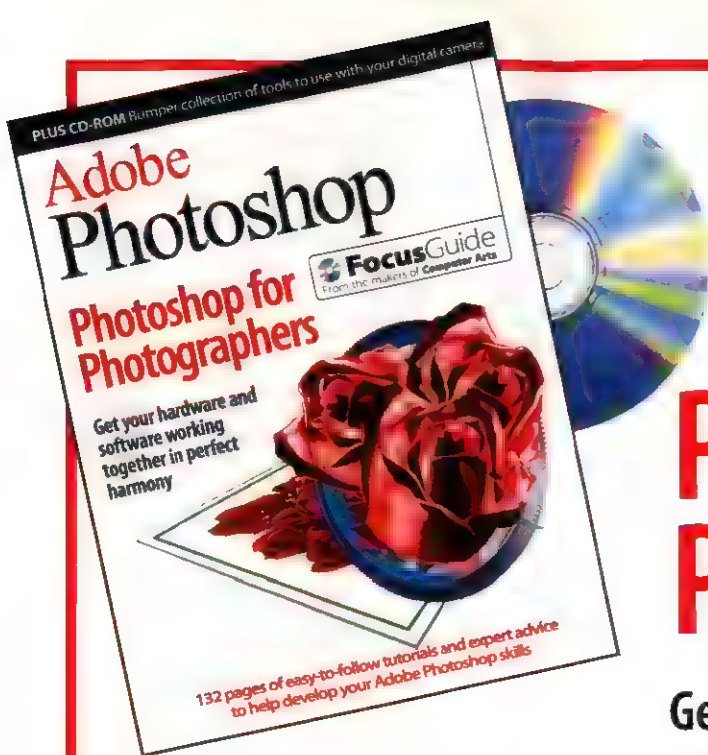
projects and interviews with the people behind them, from *TIME* Magazine covers to Alanis Morissette billboards, 3D comic strips, short animations and illustrations.

Rather than a teaching manual, this is a real coffee-table book for 3D artists: a look at what's currently happening in the industry, and a chance to hear from the varied people working within it. ●

VERDICT

A well-written book that mixes interviews and 3D expertise. Includes *Maya PLE* on the CD

7



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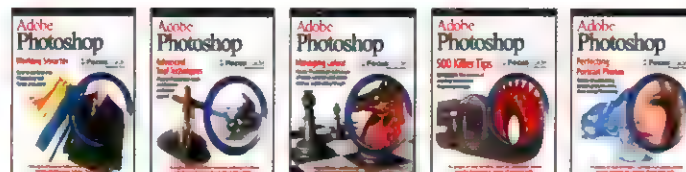


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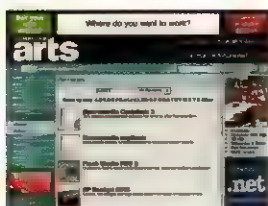
Buyers' guide

Whether you want advice on choosing a specific software package, or an overview of what's on the market, this database of past 3D World reviews contains the information you need to make the right buying decision

Online Resources



● This guide lists prices in Pounds Sterling and US Dollars. For a quick currency conversion: www.xe.com



● We don't cover non-3D software. For full reviews of complementary products: www.computerarts.co.uk



When new 3D users contact the magazine, the most common question they ask is: "Which software package should I buy?" To which the honest response is: "That really depends on you."

Unlike Web design or 2D illustration, there's no single, well-established software package that all professionals use. Instead, choosing a 3D application is largely a matter of personal requirements, not to mention individual taste. Before you begin downloading demos, however, it does help to have a broad overview of what's available – and that's where this buyers' guide comes in.

In this guide, you'll find a list of the key software packages in each particular market sector, the issue of the magazine in which it featured and a brief summary of the review. These summaries represent a single reviewer's opinion, but they should give you an idea of the key characteristics of each application.

QUESTIONS, QUESTIONS...

Before diving in, there are two fundamental questions you should ask. Firstly, are you pursuing 3D as a professional career? And secondly, what kind of 3D work do you aim to produce?

If the answer to the first question is 'no', the only limitations on your choice of 3D software are your budget and operating system. In the hands of a skilled user, inexpensive applications can generate impressive results, although they might not do so as quickly as more expensive software (or in a way that professional 3D artists would deem conventional).

If you do aim to make a living in 3D, however, you'd be well advised to pick a 'professional' application: those listed in the upper table on the page opposite. Expensive packages don't necessarily generate better results, but they tend to produce work quickly,

flexibly and reliably – all important issues if deadlines are looming. And while studios don't usually hire staff solely on the basis of the software they've used, mastering a 'name' application will familiarise you with high-end tools and increase your chances of freelance work.

Another consideration is whether you intend to produce animations or still images. As a crude generalisation, illustrators and graphic artists often favour pro applications at the lower end of the price scale, while those working in animation, visual effects or game design tend to opt for more expensive packages.

Ultimately, however, there's no substitute for hands-on experience. All major applications have demo versions that you can

CHOOSING APPLICATIONS IS ALL ABOUT PERSONAL REQUIREMENTS AND INDIVIDUAL TASTE

download and experiment with, and before you reject the more expensive packages, remember that many of them – particularly *Maya*, *Houdini*, *LightWave* and *Softimage|XSI* – have free 'learning' editions. Educational deals also offer students the chance to buy full versions of professional software for the price of a handful of DVDs: to see if you qualify, check the website of the software package you're interested in.

Fortunately, there are very few 'bad' 3D packages on the market, so choosing the right one for you ultimately comes down to personal taste. Do your research, consult the magazine, be prepared to experiment – but above all, enjoy yourself!

ALL-ROUND 3D PACKAGES (UNDER £250)

PACKAGE	OS	DESCRIPTION	PRICE	REVIEWER	WEBSITE	SCORE	REMARKS
AIST HOME 3D	PC	Cut-down version of <i>Realsoft 3D</i> , aimed mainly at home movie makers dabbling in 3D.	£184* (\$274)	AIST	www.aist.com	N/A	[Not previously reviewed in 3D World]
CARRARA 3D BASICS	Mac/PC	Extremely stripped-down version of a mid-price app, aimed at hobbyists and casual users.	£139 (\$49)	EWING	www.eovia.com	N/A	[Not previously reviewed in 3D World]
CARRARA 4 STANDARD	Mac/PC	Inexpensive all-rounder, lacking some of the high-end tools from <i>Carrara 4 Professional</i> .	£204 (\$299)	EWING	www.eovia.com	5	Still a solid purchase for a novice all-round 3D user on a budget. <i>Carrara 4</i> fixes bugs from earlier versions, but lacks the new rendering tools of the <i>Pro</i> edition.
GAME SPACE	PC	Cut-down <i>TrueSpace</i> with extra games tools, aimed at modders and indie game developers.	£154* (\$249)	Caligan	www.caligan.com	4.5	Goes some way to providing a one-stop solution for the mod community, but one with rough edges on release: those on a real budget may stick to freeware.
HASH ANIMATION MASTER	Mac/PC	Cult entry-price animation app, chosen by many leading animators for personal work.	£114* (\$279)	Hashner	www.hash.com	4.5	Powerful, intuitive rigging and animation package, complemented by a simple, versatile modeller. Now adds hair support and a sprite-based particle system.
PIXELS 3D 5	Mac	The premier – and possibly only – Mac-only 3D package: a cult app amongst Mac fans.	£174* (\$149)	Pixel Digital	www.pixelsdigital.com	4.2	Great value for money and includes a number of high-end tools, including fluids and cloth. Good render quality, but very slow, and workflow could be improved.
REALSOFT 3D 4.5 (FOR LINUX)	Linux	Even better value than the PC edition, most Linux users' main alternative to freeware.	£114* (\$179)	Realsoft Graphics	www.realsoft.com	3.5	Excellent render quality for the price, but more suited to still images than animation work, particularly character animation. OpenGL could be improved.
SHADE 7 DESIGNER LE	Mac/PC	Very inexpensive if limited all-round package, extremely popular with hobbyists in Japan.	£55* (\$109)	Curious Labs	www.curiouslabs.com	3.8	Clearly geared towards the student or amateur. This cheap and cheerful version of its bigger siblings shares the basic modelling tools but is otherwise limited.
SHADE 7 STANDARD	Mac/PC	Mid-level edition, more expensive than LE but lacks some key tools of <i>Shade 7 Pro</i> .	£114* (\$199)	Curious Labs	www.curiouslabs.com	3.8	Similar in toolset to the <i>Professional</i> edition but lacks automatic smoothing and interpolation. A reasonable buy, if you can handle the translation issues.

ALL-ROUND 3D PACKAGES (OVER £250)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3DS MAX 7	PC	Long-established 3D package still a standard in the games and architectural industries	£2645 (\$3495)	Discreet	www.discreet.com	59	No major new features, but improved stability, integrated character studio, and new Normal Mapping and character animation tools make this a worthy upgrade	9
CARRARA 4 PRO	Mac/PC	Inexpensive all-round app, now targeted more specifically at professional illustrators	£419 (\$575)	Curious Labs	www.curious.com	60	Retains Eovia's unique – and possibly off-putting – system of workflow divided between rooms, but dramatically improves animation and high-end rendering	8
CINEMA 4D 9 BASE	Mac/PC	Entry-level edition only, some important tools must be purchased as add-on modules	£425 (\$695)	Maxon	www.maxon.net	58	Not as ground-breaking an upgrade as version 8, but builds on previous innovations to deliver a capable all-round professional 3D package	9
CINEMA 4D 9 X	Mac/PC	A powerful renderer makes this increasingly respected app the choice of many illustrators	£1148 (\$1895)	Maxon	www.maxon.net	58	[This edition not specifically reviewed in 3D World] Pricier than LightWave but the MOCCA and Advanced Render modules are essential to many pro artists	9
CINEMA 4D 9 STUDIO	Mac/PC	Top-level edition of Cinema 4D, adding in BodyPaint 2 and unlimited network rendering	£1875 (\$2995)	Maxon	www.maxon.net	58	[This edition not specifically reviewed in 3D World] Primarily for large facilities needing unlimited render licenses, a tough BodyPaint 2 is a useful add-on extra	9
EMUS 5.1	Mac/PC	Perennial professional-quality animation package with a strong cult following	£465* (\$895)	E-Technology Group	www.etechnologygroup.com	59	Still an insanely fast rendering and animation package, but now minus a built-in modeller since the last – admittedly thorough – point-five upgrade	8
HOUDINI 7 SELECT	PC/Linux	Entry-level edition, primarily aimed at studios looking to build a lower-cost Houdini pipeline	£825* (\$1595)	Side Effects Software	www.sidefx.com	25	[Reviewed at version 5.1] A good additional seat for a Houdini studio, but lack of advanced character animation tools makes it use as a standalone package	7
HOUDINI 7 MASTER	PC/Linux	Powerful procedural animation package, few skilled users, but a staple of much VFX work	£8769* (\$17000)	Side Effects Software	www.sidefx.com	41	[Reviewed at version 6.1] Retains all the power of previous versions, but makes considerable advances in terms of ease of use. Also adds GPU rendering	8
LIGHTWAVE 3D 8	Mac/PC	Another long-established package, used in a wide range of work, notably TV effects	£995 (\$1695)	NewTek	www.newtek.com	53	Just improves character animation and dynamics, and streamlines workflow, but leaves the render and underlying structural problems of the app untouched	8
MAYA 6 COMPLETE	Mac/PC/Linux	Lacks some high-end tools, but an affordably priced edition of Maya for many 3D markets	£1499 (\$1999)	Alias	www.alias.com	52	Despite better mental ray and Photoshop integration and a soft modification modelling tool, Maya 6 features relatively little new for users of Complete	8
MAYA 6 UNLIMITED	Mac/PC/Linux	Powerful all-round package, still the one to beat when it comes to film effects work	£4644 (\$6995)	Alias	www.alias.com	52	Powerful new dynamic curves tools, for hairy and improved cloth, particles and animation editing make Maya 6 a much stronger proposition for Unlimited users	8
REALSOFT 3D 5 (FOR PC)	PC	Underpublicised, but well-regarded, mid-priced application, good built-in renderer	£415* (\$795)	Realsoft Graphics	www.realsoft.com	61	Enhanced Sub-D modelling and texturing make this a viable alternative to better-known 3D illustration apps. Still weak at character animation, however	9
SHADE 7 PRO	Mac/PC	Very popular Japanese package, still at very unknown in the west, but may gain ground	£725 (\$1395)	Curious Labs	www.curiouslabs.com	58	Robust modelling tools and a reasonably powerful renderer, but the interface and animation tools will seem unconventional to many western 3D artists	7
SOFTIMAGE(XSI) 4 FOUNDATION	PC/Linux	Aggressively marketed entry-level edition of a leading 3D app, very powerful for the price	£299 (\$495)	Softimage	www.softimage.com	53	Fuller featured than many entry-level editions of major packages, Foundation – originally sold for \$1,995 – sets a new benchmark for 3D software pricing	9
SOFTIMAGE(XSI) 4 ESSENTIALS	PC/Linux	Powerful, well-balanced all-round package, a smidge reduced in price over the last year	£275 (\$495)	Softimage	www.softimage.com	55	A solid upgrade to a powerful package, adding new rigid body dynamics, a fairly non-linear modelling workflow, and improved texturing and materials tools	9
SOFTIMAGE(XSI) 4 ADVANCED	PC/Linux	Widely used in games and VFX, but struggles for market dominance, with 3ds max and Maya	£4465 (\$6995)	Softimage	www.softimage.com	55	For power users, XSI 4 Advanced also throws in BatchServe and eight satellite render licenses for free. Still no decent NURBS or curve tools, though	9
STRATA 3D Cx	Mac/PC	Long-established, if relatively niche, mid-price 3D package, now targeted at illustrators	£346* (\$595)	Strata	www.strata.com	55	A capable, if idiosyncratic, package for a pro graphic artist looking for team Photoshop and Illustrator with the 3D feature for animation, however	7
TRUESPACE 6.6	PC	Another fixture in the increasingly crowded mid-price 3D software market, widely used	£310* (\$545)	Caligari	www.caligari.com	38	Improving animation and dynamics, version 6.6 addresses many of TrueSpace's shortcomings, but the inelegant interface now works to have reached its limits	8

TEXTURING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
BODYPAINT 3D 2	Mac/PC	Powerful specialist 3D painting package, used on increasingly high-profile VFX projects	£425 (\$745)	Maxon	www.maxon.net	47	Much quicker and simpler to use than the first release, and results can be stunning. Rock-solid and well-documented, but only for specialist texture artists	9
DEEP PAINT 3D 3	PC	Established 3D painting app, but not recently updated, and losing headlines to BodyPaint	£307* (\$595)	Right Hemisphere	www.righthemisphere.com	26	Powerful, but RAM-hungry and advanced mapping tools are presented in a separate app, Deep UV. Not recently updated, however. BodyPaint 3D	8
PAINT SHOP PRO 9	PC	Inexpensive 2D painting and bitmap editing app, unfairly regarded as just for hobbyists	£94.9 (\$129)	Corel	www.corel.com	57	Fantastic value for money, and version 9 adds a couple of history palette. Does nearly everything that Photoshop can, but needs better Alpha channel support	9
PHOTOSHOP CS	Mac/PC	The de facto standard for texture painting and image manipulation among 3D artists	£515 (\$649)	Adobe	www.adobe.com	48	Still the rigour for professional 3D work. Few must-have features for 3D users in the latest release, but integrated photo-stitching and Match Colours are handy	8

TALKING POINT | Photoshop vs Paint Shop Pro

FOR MANY ARTISTS, the terms '2D software' and 'Photoshop' are synonymous. Adobe's image-editing package forms a clear industry standard. But it's an expensive application, with Photoshop CS currently retailing at £515 (\$649). If you're on a budget (and own a PC) there's a cheaper alternative: Paint Shop Pro. At under a fifth the price of Photoshop, PSP is unfairly regarded as a 'hobbyist's' package.

Used by many professionals in their personal work, Paint Shop Pro is fast, packed with a range of filters, brushes and vector tools. Its only major weakness is its lack of proper support for Alpha channels. If you use Alpha channels regularly in your work, Photoshop may still be the best option. But if not, you should consider switching to Paint Shop Pro, and saving over £400. **Paint Shop Pro 9 was reviewed in issue 57**

MODELLING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
AC3D	Mac/PC	Two-dimensional modelling and rigging in the 3D world	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A
AMAPI DESIGNER 2	Mac/PC	Long established modelling package boasting a unique workflow and interface	£339 (\$479)	ECWA	www.ecwa.com	40	A powerful modelling package, particularly for organic objects, although users will either love or loathe the interface, and documentation could be improved	9
AMAPI 7 PRO	Mac/PC	Another long established modelling package, boasting a unique workflow and interface	£579 (\$779)	ECWA	www.ecwa.com	44	Well thought out, unless one is averse to a more industrial modelling package, API 7 Pro is a very solid, but limited, rendering and materials	9
AMORPHUM 1	Mac/PC	Blob-based modelling package, very popular with hobbyists, but not recently updated	£76* (\$145)	Et Technology Group	www.et-tech.com	41	A unique organic modelling package, only basic Sub-D tools, a slow renderer and a rather chunky interface, but what it does do, it does extremely well	8
FORM 3	Mac/PC	Powerful modelling package, originally designed for architectural modelling	£119* (\$145)	Autodesk	www.autodesk.com	40	[Reviewed at version 4] Powerful modelling package, offering a wide range of tools and a fast renderer, but with a few odd quirks and a somewhat complex interface	7
MOBO	Mac/PC	Powerful, customisable and Mac friendly new Sub-D modeller, created by ex-NewTek staff	£359* (\$599)	Ecology	www.moby.com	60	A relatively pricey addition to a crowded market sector, but one with a uniquely customisable modular design. Some early stability issues, but improving rapidly	8
RHINO 3	PC	Another well established 3D modelling package, originally designed for architectural modelling	£499* (\$799)	Robert McNeel & Associates	www.mcneel.com	30	New 3D rendering capabilities have this package a long way from being a simple modeller, but it's still a long way from being a full-fledged 3D modeller, however	8
SOLID 3	Mac/PC	New specialist Sub-D modelling package, expensive, and improving with every build	£499* (\$599)	Verano	www.verano.com	55	Has evolved into a promising app, following early stability issues. Quirky UV mapping, but good crossover between Sub-D and poly tools, and customisable	9
ZBRUSH 2	Mac/PC	Powerful modelling package, originally designed for digital painting, but now a full-fledged 3D modeller	£199* (\$299)	Pixelpoint	www.pixelpoint.com	53	A new 3D modelling package, offering a wide range of tools and a fast renderer, but with a few odd quirks and a somewhat complex interface	9

CHARACTER AND FACIAL ANIMATION

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
DAZSTUDIO	Mac/PC	Long established new 3D character animation package, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A
ENDORPHIN 1.6	PC	Innovative motion-synthesis system using AI to generate artificial mo-cap data	£799 (\$1297)	NaturalMotion	www.naturalmotion.com	56	Brilliant, technically accomplished, and fun to use, to boot. Generates data no real-world stuntman could achieve, and now supports multiple characters	9
FACESTATION 2	PC	Long established facial animation package, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	41	Well thought out, unless one is averse to a more industrial modelling package, API 7 Pro is a very solid, but limited, rendering and materials	8
LIFESTUDIO HEAD 2.5 STANDARD EDITION	PC	Customise a pre-built head model, apply instant lip sync and export as OBJs or an AVI	£710 (\$599)	LifeModel Interactive	www.lifemod.com	44	Good texturing tools, but some tweaking is required to finesse the lip sync generated automatically from an audio track. Manual or need tidying up	8
LIFESTUDIO HEAD 2.5 PRO ARTIST	PC	Real-time facial animation package, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	LifeModel Interactive	www.lifemod.com	44	As the Standard Edition, but with the power to import/export directly to Maya and 3ds Max. Good lip sync, but still a long way from being a full-fledged 3D modeller	8
MESSIAH:ANIMATE	PC	Powerful standalone animation package, also available as a plug-in for major 3D packages	£125* (\$239)	Eric W. Wards	www.ericwards.com	29	[Reviewed at version 3] A comprehensive character animation solution with very fast IK and deformation and powerful expressions. Now reduced in price	8
MESSIAH:STUDIO	PC	Powerful standalone animation package, also available as a plug-in for major 3D packages	£105* (\$145)	Eric W. Wards	www.ericwards.com	58	Not an industry standard application, but a very good 3D modeller, but it's still a long way from being a full-fledged 3D modeller	7
MOTIONBUILDER 5 STANDARD	Mac/PC	Innovative motion design package, originally developed by Kaydara, now owned by Alias	£645 (\$995)	Alias	www.alias.com	46	[Reviewed at version 5] Powerful IK/IK blending and real time playback, plus a new Story Window to keep things organised. Quickly becoming indispensable	9
MOTIONBUILDER 5 PRO	Mac/PC	Powerful motion design package, originally developed by Kaydara, now owned by Alias	£105* (\$145)	Alias	www.alias.com	46	Reviewed at version 5. High-end tools include mo-cap data editing and data integration. Doubly the best character animation tool now on the market	9
POSER 5	Mac/PC	The original figure posing application, also used for pre-viz and simple animation work	£105* (\$145)	Curious Labs	www.curiouslabs.com	40	New hair and cloth, and a versatile new renderer, but many rough edges from earlier versions remain, while the animation tools now need overhauling	6

RENDERING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
AM	Mac/PC	Long established new 3D character animation package, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A
ART LANTIS 4.5	Mac/PC	Old-school architectural rendering package, now awaiting an update to version 5.0	£145	Advent	www.advent.com	13	This interactive package is capable of high-quality results and provides decent renders quickly, without fuss. Few fine controls, though, and not recently updated	7
BRAZIL R/S	PC	Powerful 3D max renderer, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	31	Well thought out, unless one is averse to a more industrial modelling package, API 7 Pro is a very solid, but limited, rendering and materials	9
FINAL RENDER STAGE 1	PC	Another powerful 3D max renderer, often used in architectural visualisation work	£415* (\$795)	Rebus	www.finalrender.com	43	Powerful new HyperD engine and caustics tools, but exceptional results require a lot of tweaking. Some instabilities, particularly in distributed renders	7
MENTAL RAY 3	Mac/PC	Long established 3D max renderer, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A
POV-RAY	Mac/PC	Justifiably popular freeware 3D max renderer, capable of very high quality results	Free	POV-Ray	www.pov-ray.org	N/A	[Not previously reviewed in 3D world]	N/A
RENDERMAN 12	Mac/PC	Powerful 3D max renderer, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A
TURTLE	Mac/PC	Third-party Maya renderer, designed to offer a new balance of speed and image quality	£619* (\$1199)	Ultimate Labs	www.ultimate-labs.com	55	Blisteringly fast raytrace rendering. Currently best suited to architectural work, due to lack of support for particles and Paint Effects, but developing rapidly	7
V-RAY	PC	Powerful 3D max renderer, originally designed for digital painting, but now a full-fledged 3D modeller	£105* (\$145)	Autodesk	www.autodesk.com	N/A	[Not previously reviewed in 3D world]	N/A

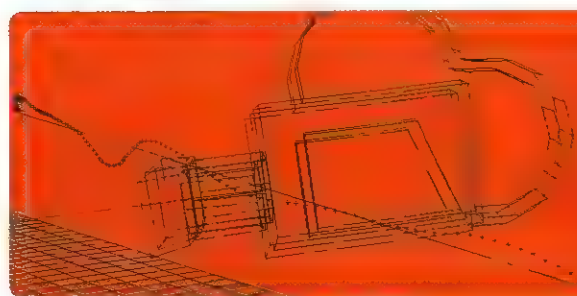


COMPOSITING AND EFFECTS

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	VERDICT	SCORE	
AFTER EFFECTS 6 STANDARD	Mac/PC	One of the most popular desktop compositing packages, with a huge range of features.	£149 (S\$199)	Adobe	www.adobe.com	4.7	Updated video painting features, plus the addition of Photoshop's liquify tool make for a major upgrade. Still the same cluttered out-of-the-box interface, however.	8
AFTER EFFECTS 6 PROFESSIONAL	Mac/PC	As After Effects Standard plus some high-end tools, worth investing in for professional work.	£195 (S\$259)	Adobe	www.adobe.com	4.7	Motion tracking, enhanced keying and masking, particle systems and 16-bit colour tools make this a better option than AE Standard for serious 3D work.	8
COMBUSTION 3	Mac/PC	A superb low desktop computer compositing package, learned with ease.	£177 (S\$225)	Discreet	www.discreet.com	4.7	Better particle tools and connectivity with 3D software than After Effects, plus a superb motion layer, but limited text tools and a relatively steep learning curve.	9
DFX+ 4	PC	Cut-down modular version of Digital Fusion, much beloved of PC-based 3D artists.	£199 (S\$259)	Eyeon Software	www.eyeon.com	4.3	Most of the improvements in version 4 are cosmetic, but still a powerful, affordable, node-based compositing app. Good visual effects and 3D tools.	8
DIGITAL FUSION 4	PC	One of the best PC-based compositing packages, but still a bit of a pain to use.	£199 (S\$259)	Eyeon Software	www.eyeon.com	4.3	Not limited to 8-bit colour space like DFX+, making this a powerful – and unregistered – PC-based compositor capable of some top-quality work.	8
MOTION	Mac	Entry-level motion graphics package suitable for simple compositing, titling and effects.	£199 (S\$259)	Apple	www.apple.com	6	Good masking and particle tools, not simply a cut-down version of After Effects. No tracking or true 3D layers, though, and the interface can be sluggish.	8
SHAKE 3.5	Mac/Linux	Powerful node-based desktop compositor, with a huge range of features.	£199 (S\$259)	Apple	www.apple.com	5.4	The most powerful desktop compositor on the market, with the possible exception of Digital Fusion. Version 3.5 adds long-awaited morphing tools.	8

CAMERA TRACKING AND MATCH MOVING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	VERDICT	SCORE	
3D-EQUALIZER 3	Mac/Linux	Venerable (and Oscar-winning) tracking package, still widely used in film effects.	On request	Science-D-Visions	www.3dequalizer.com	N/A	[Not previously reviewed in 3D World]	N/A
BOUJOU 3	Mac/PC/Linux	One of the first major alternatives to 3D-Equalizer popular in the effects world.	£5,141* (\$10,000)	2d3	www.2d3.com	3.0	[Evaluated at version 2] Generates excellent results, and a relatively shallow learning curve. The new Gold Tracks feature significantly raises user control.	N/A
BOUJOU BULLET	Mac/PC/Linux	Another venerable alternative to 3D-Equalizer, popular in the effects world.	£1,499 (\$1,999)	2d3	www.2d3.com	N/A	[Not previously reviewed in 3D World]	N/A
MATCHMOVER PRO 3	Mac/PC/Linux	Another of the old guard of desktop tracking applications, recently reduced greatly in price.	£1,006* (\$3,500)	Realviz	www.realviz.com	5.3	A highly evolved version of the software, with powerful 2D and 3D tracking tools. The recent price cut brings it in line with its newer competitors.	8
PFMATCH	Mac/PC	High-end tracking package, offering a huge range of tracking tools, with a steep learning curve.	£1,000 (\$1,000)	The Pixel Farm	www.thepixelfarm.co.uk	4.7	Great price, a though only broadcast resolution footage in AVI and QT formats supported. Good user interface, but no proxy resolution tracking.	8
PFTTRACK 2	Mac/PC	First of a new generation of lower-priced broadcast-quality camera tracking packages.	£1,000 (\$5,801*)	The Pixel Farm	www.thepixelfarm.co.uk	5.7	Fast and robust 2D and 3D tracking, with powerful optical flow and analysis tools. Affordable, although recently undercut in price by MatchMover Pro.	9
SYNTHEYES	PC	Automating a formerly tedious and highly manual task, with a huge range of features.	£1,800 (\$1,800)	Andersson Technology	www.ssyntech.com	4.9	An incredible range of tools, for the price. Outperforms costlier rivals on many tasks, but workflow can be counter-intuitive for those used to other apps.	9



TALKING POINT | Camera tracking on the cheap

THE PRICE OF camera-tracking software has recently fallen sharply; Realviz's massive price cut of *MatchMover Pro* (from \$11,000 to \$3,500) reflects a growing trend towards lower-cost desktop tracking packages. But do its newer rivals offer value for money, or simply smaller

toolsets? Matthew Merkovich didn't think so in his review for *SynthEyes* in issue 49: "It's rare for a piece of software to be so feature-rich and also so affordable." To form your own opinion, download the demos and try for yourself... *SynthEyes* was reviewed in issue 49

LANDSCAPE GENERATION

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	VERDICT	SCORE	
BRYCE 5	Mac/PC	The original landscape generator, now back in development after several years in limbo.	£46* (S\$95)	DAZ Productions	bryce.daz3d.com	16	Often dismissed as a toy for hobbyists, Bryce is easy to use and renders at high quality. Good for photorealistic backgrounds, even with a slow renderer.	8
MOJOWORLD 3	Mac/PC	Unusual landscape-generation app, with a unique emphasis on creating entire planets.	£103* (S\$139)	Pandamedia	www.pandamedia.com	60	A unique approach to landscape generation that will divide users. Some great tools, but hard to control fine details and the interface can be frustrating.	6
VUE 4 PROFESSIONAL	Mac/PC	Full-featured, high-quality landscape generator, with a professional interface.	£129* (S\$169)	Evolution Software	www.evolutionsoftware.com	46	Complete re-write, redesigned for pros, users, better import/export capabilities and expanded simulation features. Some minor bugs, but very fast and intuitive.	8
VUE 5 ESPRIMO	Mac/PC	Landscape generation's current market leader, high-quality results at an affordable price.	£129* (S\$169)	Evolution Software	www.evolutionsoftware.com	59	Rightly the best-selling landscape generator, very realistic results, and easy to master. New rendering is slow, however, and still no proper animated water.	9
WORLD CONSTRUCTION SET 6	Mac/PC	Another of the old guard of landscape generators, with a huge range of features.	£149* (S\$199)	3dnative	www.3dnative.com	3	Reviewed for version 5. A venerable and comprehensive landscape program, though the interface is a bit dated and the workflow is a bit cumbersome.	8
WORLDBUILDER GENESIS	PC	A popular alternative to the Vue family, more powerful than Bryce, less technical than WCS.	£92* (S\$119)	Digital Element	www.digitalelement.com	57	Beautiful end results, and fairly easy to use. How very much optimised for 3ds max, though, while some of the new features and the tutorials lack polish.	7
WORLDBUILDER PRO 4	PC	Another of the old guard of landscape generators, with a huge range of features.	£149* (S\$199)	Digital Element	www.digitalelement.com	57	Another of the old guard of landscape generators, with a huge range of features.	7

WEB 3D AND MULTIMEDIA

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
ANARK STUDIO 2	Mac/PC	Established authoring package for interactive 3D presentations	£599* (\$995)	Anark	www.anark.com	N/A	Not previously reviewed in 3D World	N/A
AXELEDGE 2	Mac/PC	All-in-one authoring and online animation package, described as like Flash in 3D	£309* (\$595)	Mind Avenue	www.mindavenue.com	33	Powerful all-round authoring package, with good animation and interaction editing tools. Import and export options much improved since version 2.0	8
CULT3D	Varies	Free software suite for exporting 3ds max and Maya models in interactive online format	Free	Cycore	www.cycore.com	12	[Reviewed using the 3ds max exporter] Relatively straightforward to use, with a good range of options in the exporter. Very much more stable in recent builds	7
DIRECTOR MX 2004	Mac/PC	De facto standard for authoring multimedia CDs/DVDs, now incorporating simple 3D tools	£909 (\$1,059)	Macromedia	www.macromedia.com	37	Greatly improved layout, but few new 3D tools since version 8.5. Hasty physics and useful web output tools, but programming needed for complex effects	7
QUEST3D 2.1 ENTERPRISE	PC	Real-time 3D authoring tool, also available in cheaper Lite and Professional editions	£1,035* (\$1,999)	Act-3D	www.quest3d.com	48	Full-featured all-round authoring app, but fairly easy to master no programming required. Can become unmanageably cluttered on complex projects, though	8
SWIFT 3D 4	Mac/PC	3D to vector graphics conversion tool, one of the most regularly updated interactive 3D apps	£97* (\$189)	Electric Rain	www.swift3d.com	56	No major new tools, but several key usability tweaks see this 3D-to-Flash app maturing as a package. Generates simple animations quickly and painlessly	9
WIREFUSION 4 ENTERPRISE	Mac/PC, Linux	Visual authoring tool for interactive 3D content, also available in cheaper editions	£1,095 (\$1,095)	Demicron	www.demicron.com	56	Straightforward all-round authoring solution, no need for programming or special plug-ins to create new output. Slightly unorthodox, but quick to master	8

OTHER TOOLS

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3D S.O.M.E.	PC	Image-based modelling software, one of the newer, less expensive additions to the market	£299 (\$582*)	Creative Dimension Software	www.cdson.com	43	Requires photos of an object against a marker grid like D-Scriptor or iModeler, but offers greater automation and can use uncalibrated images for texturing	8
D JOINER	PC	Photo stitching software, less widely known than Stitcher, but suitable for many projects	£400 (\$575*)	Division Works	www.dvw.com	20	In good hands, it does what it's meant to do. But it suffers from a lack of auto features and poor usability. Documentation is disappointingly slim, to boot	7
D-SCRIPTOR 2 STANDARD	PC	Image-based modelling software, another multi-priced package aimed at home users	£500 (\$960*)	D-Vision Works	www.d-vision.com	11	[Reviewed at version 1] A good tool for creating 3D models from images, and cheaper than iModeler. Much slower, and not as powerful, however	8
DEEP EXPLORATION 3.5	PC	File conversion software, capable of tackling a wide range of file formats, including CAD	£77* (\$149)	Right Hemisphere	www.righthemisphere.com	45	Well-designed model viewer, file conversion and asset management utility includes basic 3D model editing tools, rendering and Shockwave output	8
FRAMEFORGE 3D STUDIO	Mac/PC	Storyboarding software, first of a new wave of apps aimed at previz and 3D storyboarding	£180* (\$349)	Innovative Software	www.frameforge3d.com	55	Extremely easy to use, and scales to even high-budget movies. Specialised props only available as add-on packs, though, and complex scenes can be sluggish	9
IMAGEMODELER 4	Mac/PC	Image-based modelling software, one of the earliest desktop photogrammetry packages	£712* (\$1,380)	Realviz	www.realviz.com	59	Gives professional quality results, and can cope with architectural-sized objects, but requires considerable user input. Quality also comes at a price	7
IMODELLER 3D 2.3 WEB	Mac/PC	Image-based modelling software, creates 3D models for online use, in a Java-based format	£70* (\$134*)	UZR	www.imodeler.com	68	Like the pro version but cheaper. With the right objects, this can produce quite impressive results, wait until the release of version 3, which supports concavity	6
IMODELLER 3D 2.3 PRO	Mac/PC	Image-based modelling software, all-purpose app, exporting to a range of 3D file formats	£152* (\$675*)	UZR	www.imodeler.com	58	Impressive and more powerful than its main rival D-Scriptor, it has too many irritations, it may be easy to learn, but it's quirky and frustratingly unstable	6
NUGRAF	PC	File-conversion software, powerful, with support for batch conversion and CAD data	£256* (\$495)	Okino	www.okino.com	21	[Reviewed at version 4] This affordable package performs a demanding task exceptionally well, and is relatively affordable. User interface is a tad dated	8
PARTICLEILLUSION 3	Mac/PC	Particle software, generates 3D-style effects in 2D, niche, but used on many pro projects	£206* (\$399)	WonderTouch	www.wonder-touch.com	41	A fast, flexible alternative to conventional 3D particle effects, and fits well into production pipelines. Would be improved by more specific forces and user control	8
POLYTRANS 3	PC	File-conversion software, cut-down version of NuGraF, lacks batch conversion facilities	£134* (\$245)	Okino	www.okino.com	2	[Reviewed at version 1] Not your everyday 3D program, but a very useful one that 3D artists should consider. Converts on doesn't always run smoothly	7
REALFLOW 3	Mac/PC, Linux	Fluid simulation software, the current market leader for realistic fluids, used in film projects	£620* (\$1,200)	Next Limit	www.nextlimit.com	50	Sets the benchmark for power and controllability for fluid simulation systems, but at a price. Still some stability and usability issues, particularly in the Mac version	7
STITCHER 4.0	Mac/PC	Photo-stitching, the leader in its field, though similar tools are now present in Photoshop	£129* (\$180)	Realviz	www.realviz.com	60	Incredibly powerful and versatile. Not a quick solution, but stands above the competition in clarity of results, although that quality comes at a price	7
STORYVIZ	PC	Previsualisation software, the latest in a new wave of previz and storyboarding apps	£185* (\$350)	Realviz	www.realviz.com	60	Far more flexible and open-ended than simple storyboarding apps, and includes extensive and real-time animation capabilities. A serious investment, however	8



CONTACT US | Have we missed anything?

THINGS CAN CHANGE very quickly in the world of 3D software. If you've spotted an error in this buyer's guide, please contact us at the email address below. However, before writing in, please bear the following points in mind:

1. All prices exclude VAT and shipping, plus any optional extra costs, such as printed manuals or maintenance contracts.
2. Asterisks denote currency conversions from a list price at the current rate of exchange when the entry was added to the buyer's guide.

3. Due to limitations of space, not all sectors of the 3D market can be covered each issue. We aim to vary our listings from month to month.
4. Space also precludes us from listing the thousands of plug-ins currently available.

5. The verdict column contains a synopsis of our last published review. In most cases this will refer to the current version of the software. Where this is not so, it should be clearly noted.

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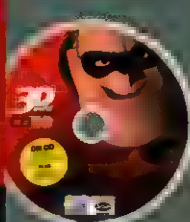
ISSUE 61 RISING STARS
February 2005

The ten studios most likely to shake up the CG industry in 2005, rig a tentacle superhero character in Maya, how The Embassy VFX created its cult Citroën 'dancing robot' ad
ON THE DISC
Full copy of trueSpace4.3, as sold for \$595, six Pixel Corps training videos



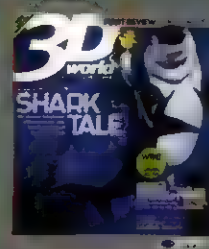
ISSUE 60 PIXAR POWER!
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ISSUE 59 MADE IN JAPAN
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ISSUE 58 SHARK TALE
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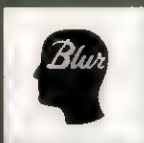
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studio profile



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- Bulletproof Monk (2003)
- Rockfish, short (2003)
- South Park: Bigger Longer & Uncut (1999)

HR CONTACT
Tom Dillon (tom@blur.com)

URL
www.blur.com

TYPE OF WORK UNDERTAKEN
3D feature films, film FX, game cinematics, large-format ride films, commercials, and broadcast design

NUMBER OF FULL-TIME EMPLOYEES
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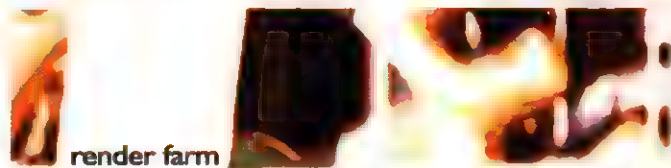
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BUSINESS END

Each issue, our panel of experts answer the legal and financial questions of freelancers and small studios. This month, we ask...

"Who owns the rights to my short film?"

A Two years ago, my small UK-based animation company needed a job producing a promotional film for a US insurance firm. The firm provided around £7,000 in development funding, but then pulled out, leaving the project uncompleted. We attempted to complete the film as our own independent short, only to be threatened with legal action by our original backers. The script and concept art were produced by us; the only connection the insurance company has is the money it initially invested. So who owns the rights to the short? Ultimately, can we get this film made?

SIMON CORNISH, MOVIE

A From what you've said, it would appear that you didn't enter into a written agreement with the insurance firm. Wherever possible, you should enter into written agreements in order to avoid uncertainty in the future. However, what is clear is that there is a contract between you - albeit one that is not documented. In essence, you are trapped in the middle of the Atlantic between US and UK law, and because of this, yours is a complex scenario.

Under UK law, the ownership of the intellectual property is determined by the Copyright Designs and Patents Act 1988: unless otherwise documented, the owner of the work is the creator of the work. Even where the work is undertaken as part of a commission, the copyright will remain the property of that creator.

However, in the absence of a formal written agreement, it might be possible to infer a different set of intentions - one that shows that the work vests in the US company and not in you. For example, a court could take the language you used in any correspondence relating to the film into account. If you referred to it as "your film" or mentioned "your rights", for example, an intention to assign the work to the insurance firm could be reasonably inferred. A court would also look at your previous relationship with the firm as an indication of your usual working practice with regard to ownership of copyright and other related intellectual property rights.

Under US law, there is also a category of commissioned works called 'works made for hire'. Their definition is contained within the Copyright Act 1976, and there are nine subcategories, one of which is material commissioned for inclusion in a motion picture or

audiovisual work. Whether or not the film was made for hire within the meaning of the Act will depend on the relationship between you and the insurance firm.

Firstly, where a work is created by an 'employee', it is owned by the employer. (Under US law, this term goes beyond the normal employer/employee relationship, and is determined by the US laws of agency: important factors being the nature of the correspondence between the two, and the amount of control that the commissioner had during the process of creating the work.) However, where a work is created by one independent company for another, the work will only be considered a 'work made for hire' if there has been a written agreement specifying that this is so.

When determining which law applies in your case, the courts will consider, for example, the country in which the contract was concluded, where the work was made, where it was to be used and where any alleged breaches or infringements take place. Each case turns on its facts and it is therefore difficult to say much more here without looking at your situation in detail.

If the judgement is that UK law applies, it is likely that you own the rights to the film. Under US law, your right to the work will depend on the nature of your relationship with the insurance company, and how the work itself complies with the definition of the US Copyright Act.

Whether or not you can complete the film depends largely on the answers to these questions. Your next step should be to obtain specific advice from US and UK attorneys in this respect. Also, if you have not already done so, you should obtain release forms from all performers in the film, and acquire all intellectual property rights for any work created for it by anyone other than an employee of your company.

In future, when you take on projects of this kind, be very careful of the language you use in correspondence with the commissioning company - and for heaven's sake, get the agreement down in writing!

Lee Gage is an intellectual property solicitor at leading media and entertainment firm, Harbottle & Lewis LLP. He advises creative businesses on all aspects of IP and IT law issues. [w] www.harbottle.com

UK Patent Office:
General information on UK intellectual property law
www.patent.gov.uk

US Patent and Trademark Office:
General info on US intellectual property law
www.uspto.gov

Design Law: Protecting and Enforcing Rights by Margaret Briffa and Lee Gage. Lee Gage's own book on the subject. Price £59.95
www.lawsociety.org.uk

IMPORTANT NOTE

This article is written in general terms and is not legal advice. Before taking any action on the basis of its contents, you should take specific legal advice. Neither 3D World nor Harbottle and Lewis LLP will be responsible for the results of your acts or omissions that are made on the strength of this article.

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In issue 146:

Portable pleasure

How Sony aims to reinvent handheld entertainment with its spectacular PSP

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MAIN The movie ends with its title character flying away over the rainbow on his magic carpet: "an extraordinary image that no film could possibly get away with today," says Paul Franklin

ABOVE The film's effects sequences seem to exert their influence, even in the present day. Shelob, anyone?

LEFT The movie's pioneering effects evoke a painterly European tradition of image-making rarely seen in modern effects work

INSPIRATIONS

Leading figures from the world of 3D discuss the projects that inspired their own work. This month: **Paul Franklin** on *The Thief of Bagdad*



"I DON'T REMEMBER the first time I saw *The Thief of Bagdad*. It was just one of those things that always seemed to be on TV on Saturday mornings in the '70s. The first time it really hung together for me was

when I was ten. I happened to be watching it with my mother, who remembered it from its original release, and told me what a big event it had been at the time.

At art school, and throughout my later life, the movie became a recurring theme. As I learned more about film making, I began to realise how influential it had been. There are shots in the film echoed by *Close Encounters of the Third Kind* and the Shelob sequence in *Return of the King*, while Disney's *Aladdin* seems to be lifted from it wholesale, right down to the colour palette.

One of the artists on the project was the great Wally Veevers who, towards the end of his career, worked with Kubrick on *2001*. When I found that out, it reinforced my conviction that the film was important; that it formed a direct line to the movie that marked the birth of the modern visual effects industry.

As well as puppetry and miniature work, I think it was the first use of bluescreen in the film industry: you can see blue fringes around objects in some of the shots, particularly in the scene where Jaffar, the evil vizier, takes control of the mechanical horse that allows him to fly. Even today, with all our technological advances, it would be ambitious, and all these guys had was an

optical printer. There was no such thing as motion control - it must simply have been a question of trial and error to get the different passes to lock up.

I'm sitting here in a facility loaded down with *RenderMan* and all the modern tools - the same tools that are used in every other studio around the world - and it's a real struggle to assert your personality over the technology. Optical effects had a kind of individual character that came from using slightly different gels, slightly different lenses, and it gives them a degree of complexity and richness that's hard to achieve digitally.

Software these days gives you so much, so quickly, that people get lazy: they don't investigate other ways of doing things. Many young animators could learn a lot from *The Thief of Bagdad* about what makes a film work, and it's not simply slavish attention to reality, or to the physics of how a genie would fly.

Ultimately, the film exists because visual effects allowed its creators to tell a story, not so that they could become the story themselves. It's a great lesson in how effects can join with set design, lighting and a score to create a seamless, consistent fantasy world. *The Thief of Bagdad* isn't the greatest film ever made - some of the acting is very much of its time - but it is my favourite. If I could remake it today, I wouldn't change a thing about it."

Paul Franklin is VFX Supervisor on *Batman Begins*. He founded Double Negative's 3D department in 1998. [w] www.dneg.com



ABOUT THE MOVIE

Produced by the legendary Alexander Korda in 1940, *The Thief of Bagdad* was directed by no less than six separate directors, including the young Michael Powell. A Technicolor Arabian Nights-inspired extravaganza, the movie went on to win an Oscar for its pioneering special effects, which include a flying carpet, a giant genie, and the lead character turning into a dog. The Region 2 DVD is available from most online stores, and is published by MGM DVD.

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3D World exclusive Win an Alienware MJ-12 Workstation!

We reviewed the MJ-12 laptop in issue 60. Now here's your chance to win its big brother, the Alienware MJ-12 4500: a state-of-the-art 3D system worth £2,800

Alienware is best known for high-end PCs with a unique, retro, glowing Alien-influenced look, primarily aimed at well-off gamers. However, the Ireland-based PC manufacturer also has a successful business in manufacturing workstations for the creative professional market, including 3D rendering.

An expert in high-performance PC systems, when Alienware turned its hand to workstations, it did away with the flashy chassis design, but kept the renowned workmanship and the unique freephone technical support - manned by technicians who know what they're talking about. For more information, check out the creative/professional section of the Alienware website at www.alienware.co.uk, or call +44 (0) 800 279 9751.

The MJ-12 4500 cuts a modest figure, but deep inside it lurk two state-of-the-art 64-bit processors and a range of specially selected components, all tuned to extract the best performance from demanding 3D content-creation applications. The result is rock-solid, high-performance workstation computers, ideal for creative professionals. What's more, Alienware is offering 3D World readers the chance to win one of the systems, worth over £2,800.

To be in with a chance of winning this otherworldly machine, simply answer the question below, then complete the tie-breaker in no more than 20 words. Send your completed entry to us by email to 3dw.competition@futurenet.co.uk. Please include the words 'Alienware competition' in the subject line of your message and remember to include your full name and postal address. The best entry received before 1 May 2005 will win the Alienware system with the specifications listed on the page opposite.

QUESTION

What does the MJ-12 namesake of the Alienware workstation refer to?

- a) A top-secret UFO research base
- b) A top-secret government department
- c) A top-secret airforce UFO prototype

TIE-BREAKER

"If I won the Alienware MJ-12 workstation, I would use it to..."

(complete in no more than 20 words)



TERMS AND CONDITIONS

These rules include any instructions set out in the terms of this competition. By entering this promotion, the entrant will be deemed to have read and understood these rules and instructions and to be bound by them. Employees of Alienware, Future Publishing Limited, or any other person directly connected with the offer or their immediate family will be ineligible to enter. Persons under the age of 18 may only enter with the consent of a parent or legal guardian. Any entry that is incomplete, illegible, late or otherwise does not comply with the rules may be deemed invalid with the sole discretion of the Editor. Proof of sending an entry will not be deemed to be proof of delivery. The winner will be notified as soon as he or she has been ascertained, and the results published on the 3D World website. The Editor's decision on all matters affecting this offer is final and legally binding. No correspondence will be entered into. Closing date is 1 May 2005.

POWERED BY OPTERON

The AMD Opteron processors in the Alienware MJ-12 4500 workstation are designed with the digital professional in mind, offering the highest 3D rendering performance of any desktop processor. With features such as Direct Connect Architecture connecting CPUs directly to CPUs to allow for more linear symmetrical multiprocessing, the 64-bit AMD Opteron processor-based workstations breathe new life into the film and music industries, by successfully reducing the cost of production, shortening the time to market and providing an ever-expanding palette of special effects.

● Tuned to extract maximum performance from demanding graphics applications, the Alienware MJ-12 4500 is an ideal system for 3D work



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JENNA 2.22 is a powerful real-time procedural geometry engine for objects and animated hierarchies in *Cinema 4D R9*. This bundle of plug-in objects includes such powerful tools as *TWEENER*, *ITERATOR* and *ALLIE*. Turn to page 60 to discover how to use it to create the striking image below.

To use this product, you must first register online at corearsenal's website to receive the licence key (there's a direct link in the register box of *J2*). You will be asked for your 11-digit *Cinema 4D* number (easily located in the Personalize window of *C4D*). You will then be supplied a key to copy and paste into the register window.



FACTFILE

FORMAT

PC/Mac

SYSTEM REQ

Cinema 4D R9 and a system capable of running it

DEVELOPER

corearsenal

WEBSITE

www.corearsenal.com

USING THE CD

GETTING STARTED

On a PC, this CD should auto-run when inserted into your CD drive. If not, run *3dw.exe*. To toggle autorun on and off, use the Control Panel on your computer. On a Mac, choose *3DWClassic* or *3DWIOSX* to suit your operating system.

USING THE INTERFACE

The disc interface requires Windows 98, Me, 2000, XP or Mac OS 8+. You'll also need an active Internet connection to make full use of the interface. For best results, ensure you're using a version 3 Web browser or better.

POINTS TO NOTE

- Some software may require free registration over the internet or by phone
- Some software may not be available in all territories
- Values quoted are the original prices for which the software was sold (including packaging and manuals).

FACTFILE

FORMAT

PC / Mac

SYSTEM REQ

Windows 2000 / XP / Mac OS X 10.3, 1GHz processor, 512MB RAM

DEVELOPER

Maxon

WEBSITE

www.maxon.net

Cinema 4D R9

DEMO Follow our cover tutorial on page 46 with this trial version of Maxon's 3D software

THIS DEMO BUNDLE includes the core *Cinema 4D R9* software plus the Advanced Render, MOCCA, Thinking Particles, Dynamics, PyroCluster and Sketch and Toon modules, and the demo version of *BodyPaint3D R2*. **Demo restrictions:** scenes, movies and textures cannot be saved; textures show a transparent MAXON logo. *Sketch and Toon* cannot render larger than 640x480 pixels; omits FlashEx, Uzi and Shockwave export modules & *C4D/BodyPaint* exchange plug-ins for *After Effects*.

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MAX SHELEKHOV from leading real-time 3D content developer 3DRT.com has supplied a bundle of 10 high-quality MAX-format models, worth \$345, for the CD. This varied selection includes futuristic buildings and vehicles, as well as weapons, a concept vehicle, and even a detailed warrior character.

FACTFILE

FORMAT

MAX

DEVELOPER

3DRT.com

WEBSITE

www.3drt.com

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www.digital-tutors.com

VEGETATION IN 3DS MAX

A sample chapter from Pete Draper's book, *Deconstructing the Elements with 3ds max 6*, supplied in PDF format. The chapter provides a complete tutorial on creating a bank of uncut grass, via deformation modelling, displacement and particles. All the necessary reference material and scene files are included on the CD

www.focalpress.com

LEAD SOFTWARE

JENNA v2.22
CINEMA 4D R9 (DEMO)
10 3DRT.COM MODELS

For full details, see facing page

**OTHER RESOURCES****25 TEXTURES**

A comprehensive selection of high-resolution, fully tiling photographic textures, themed on grass and rock, supplied for use in your projects by Amazing Textures

www.amazingtextures.com

5 HDRI FILES

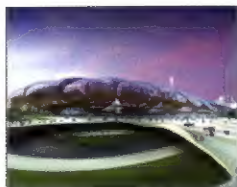
Five hi-res images suitable for use in any 3D application capable of supporting HDRI. These files can be used to produce high-quality renders at up to PAL resolution. They are licensed for non-commercial use only

www.hdri-studio.com

Reader offer: see CD interface



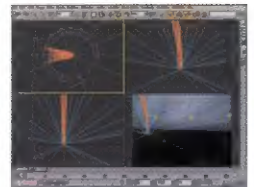
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**ANIMATIONS**

Visualisations for the 2012 UK Olympics bid
www.smoother.co.uk
Full article: page 68

SUPPORTING FILES

Full-sized screenshots, project files and other resources to accompany the tutorials and Q&As printed in the magazine this issue
Magazine contents: page 4

**TROUBLESHOOTING**

THIS IS A FUTURE TECHNOLOGY CD-ROM. This disc has been thoroughly scanned and tested at all stages of production, but - as with all new software - we still recommend you run a virus checker before use and have an up-to-date backup of your hard drive. While every

effort has been made to keep this CD virus-free, Future Publishing Ltd cannot accept responsibility for any disruption, damage and/or loss to your data or computer system that may occur while using this CD or the programs and data on it. Consult your network administrator before installing software on a networked PC.

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in-depth help on the applications included on this CD, or on your hardware or operating system. For software support-related issues, please contact the relevant product's developers. We also regret that we are unable to provide serial numbers over the phone. Future Publishing can only provide technical support for this cover disc for a period of six months after this magazine's on-sale date.

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